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ABSTRACT

Presented is a guide for helping secondary school students investigate the litter problem, acquire litter control skills, and develop an anti-litter ethic. The manual contains a hierarchy of learning objectives, a pretest/posttest, background information on litter, and activities keyed to the learning objectives. Each lesson includes brief statements of content, instructional activities, and assessment tasks. Provided in the appendix are a glossary, a list of organizations and agencies involved in litter control, supplementary mathematics problems, and more than 20 litter-related activities appropriate for any subject area. (WB)

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FOREWORD

One of the most persistent and frustrating pollution problems of cities and states across our nation is litter. In 1977 the Legislature asserted in The State Litter Control Law, Act 2 "that the visual appearance of much of our State is blighted by the presence of litter."

Litter is an environmental problem of social origin. Both at work and at play, humans produce an alarming amount of litter, and the amount of litter produced seems to be on an increase. Efforts must be made to control and reduce litter. Systems of litter control and reduction must be implemented where none exists, while existing systems are vigorously maintained.

Litter control systems, however, will not cure the litter problem unless people understand their functions and uses and make positive commitments to utilize these systems to reduce and control litter. The State anti-litter slogan, "Lend A Hand To Clean Our Land," must reflect the belief by every person in our State that we are individually responsible for contributing to the reduction of litter.

The intent of this instructional guide is to help teachers make students in the public schools of Hawaii aware of the urgent need to control and reduce litter, to help them develop the necessary skills to solve the litter problem and to instill in them the anti-litter ethic.

Charles G. Clark, Superintendent

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JAN 2 6 1981

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Chapter I

INTRODUCTION

Since the late 1960's, there has been a growing awareness of the problem of litter across our nation. This awareness has prompted research into the causes of the litter problem and possible solutions to it. Results of this research have been used by many communities and states to initiate the necessary actions to solve the litter problem.

During 1971 and 1972, researchers, sponsored by the United States Brewers Association, conducted litter surveys in 105 cities of different population categories in 17 states comprising almost half of the nation's total population. They pinpointed three things that generally had been unknown or unrecognized about litter that could be applied to both urban and rural situations.

First, it was found that litter comes from seven sources, not just the two--pedestrians and motorists--at whom most litter control efforts have been directed. The other five that were found are household refuse, commercial refuse, loading and unloading operations, uncovered trucks, and construction projects. It was discovered that these five accounted for more of the litter total than pedestrians and motorists combined.

Second, the surveys found that litter has dynamics. Wind, water, traffic and animals cause it to spread in all directions from its point of origin.

And third, it was observed that more than 75 percent of the litter in constant evidence in the average community was trapped at such locations as fence and wall bases, grassy and planted areas, catch basins, embankments and similar lodging places.

It was clear from these findings that controlling and reducing litter called for a systematic approach that would take into consideration all of the above factors. The State of Hawaii is developing such an approach and schools are an essential part of it.

In formulating ways of involving schools in reducing and controlling litter, it has been possible to draw from an in-depth study of school children and litter control that was made in the Bridgeport Public Schools, Bridgeport, Connecticut, during the early 1970's. The most significant findings and observations that came from this research can be summarized as follows:

1. "One out of five young persons is not concerned about community appearance." This indicates a need for greater emphasis on the desirability of clean surroundings over littered surroundings.

2. "Children in elementary grades are the most responsive to initial basic education on litter control. This response declines progressively through junior high school and high school." This suggests the need for developing the right attitudes and practices in the early grades and working to preserve them as students go through the higher grades.

3. "In litter control education, children learn more by doing than by listening." This indicates that greater results will be achieved if along with oral instruction there is emphasis on participation.

These findings and observations brought into focus the potential of a two-part approach:

1. Making sanitation related to litter a curriculum component beginning with the basics in the lower grades and building to increase the levels of sophistication in the higher grades; and:

2. Supplementing the curriculum component with participation projects.

This instructional guide initiates this two-part approach as the school system's contribution to the present statewide effort to curb the proliferation of litter. It is expected that classroom and support personnel will find imaginative ways to use its ideas and suggestions.

SUGGESTIONS FOR USE OF THIS GUIDE

This guide was developed as a part of the Department's Environmental Education Program.* Since environmental education is thematic in nature weaving through such subjects as science, social studies, mathematics, language and fine arts, health, physical education, and practical and industrial arts, materials in this guide may be infused into any of these subject areas. Possibly the best approach for use of this material is to integrate the material into several subject areas where appropriate. Where subjects are departmentalized, this guide could provide a vehicle for integrating several subjects and developing an interdisciplinary approach which reinforces the relevancy of the material learned by the student.

It is recommended, but not essential, that this material be presented in conjunction with a school, community, or state cleanup campaign to enhance the development of the students' commitment to improving their environment.

ORGANIZATION OF THIS GUIDE

The guide is organized into four chapters and an appendix. The first three chapters of the guide contain introductory and background material to give teachers a clear picture of the litter problem and to outline the steps for development of students' knowledge of the problem. The fourth chapter contains a set of instructional guidelines to help teachers implement actual classroom instruction on the problem. The appendix of this guide contains a glossary of terms used in litter control, activities which may be used to supplement classroom instruction, and supplementary information which may be useful in conducting the activities in this guide.

*Consult other Environmental Education Program documents--A Framework for Environmental Education in the Public Schools of Hawaii and Environmental Education K-12 Curriculum Guide for program information.

Chapter II

LEARNING OBJECTIVES

This Chapter sets forth a set of twelve learning objectives which are to be developed in the guide. These objectives which are based on material found in Chapter III are arranged in a hierarchy. This hierarchy begins with objective number one dealing with the definition of the term litter and continues through development of a greater understanding of the litter problem to ultimate objective number twelve of controlling and reducing the causes and spread of litter.

The learning objectives in the guide contribute to student attainment of the performance expectations (PE's) listed in Student Performance Expectations of the Foundation Program and the Environmental Education K-12 Curriculum Guide. While it is not feasible to list all the PE's which are represented by the learning objectives in this guide, the major PE's related to the objectives are:

Grade 8 - Cites examples of statewide, national, or worldwide environmental problems.

Grade 10 - Describes responsibilities of state and federal agencies for environmental management or control.

Grade 12 - Identifies federal or state laws designed to protect people and the environment and discusses their effectiveness.

Teachers should note that the learning objectives contribute to many other PE's as well as those listed.

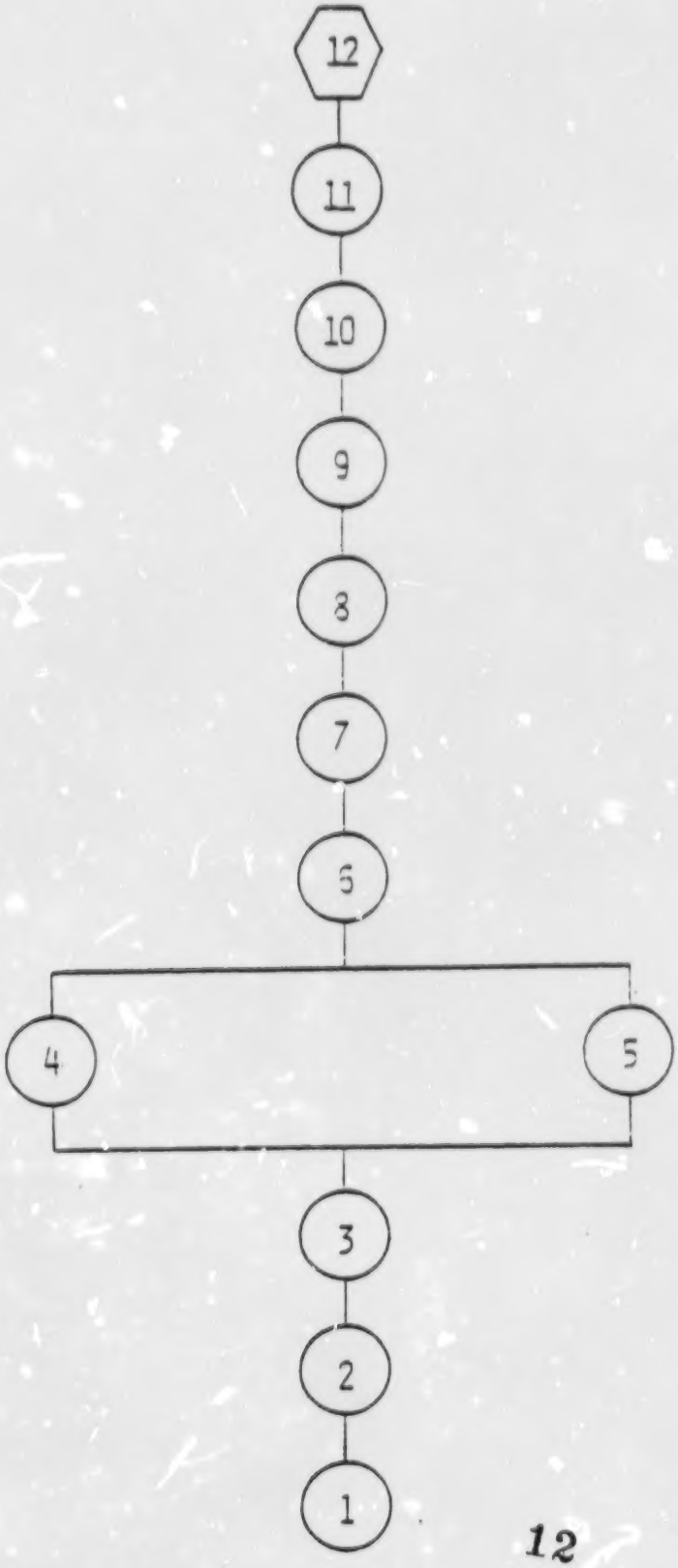
Also included in this Chapter is a pre- and post-test. This test has been provided to aid teachers in assessing students' knowledge of the litter problem prior to instruction and in evaluating students' achievement of the learning objectives after instruction.

LEARNING OBJECTIVES

1. Students will be able to identify and define the term litter.
2. Students will be able to distinguish litter from non-litter and name five different types of materials that become litter.
3. Students will be able to identify the seven sources of litter.
4. Students will be able to identify and describe the four elements that cause litter to spread.
5. Students will be able to identify and describe five locations where litter becomes trapped.
6. Students will be able to identify and describe ten reasons why people litter.
7. Students will be able to name and describe the hazards of litter.
8. Students will be able to list and describe five actions necessary for the control of litter.
9. Students will be able to list and describe one responsibility and one function of each of the litter control agencies.
10. Students will be able to identify and describe the litter regulations that affect citizens of the State of Hawaii.
11. Students will be able to describe the procedure of the judiciary system in the State of Hawaii for handling litter violations.
12. Students will be able to identify and describe the four components of litter control.

On the following page (B3), the learning objectives have been arranged in hierarchical order. Students should progress upward in the hierarchy as each objective depends upon the attainment of the previous objective. One exception, however, is objectives four and five which are simultaneously dependent on objective three and together form the basis for number six.

A HIERARCHY OF LEARNING OBJECTIVES FOR LITTER CONTROL



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PRE- AND POST-TEST ON LITTER

I. COMPLETION: CHECK THE CORRECT ANSWERS.

A. Elements which cause litter to spread from one point to another are:

_____ 1. dirt

_____ 2. books

_____ 3. wind

_____ 4. water

B. Lodging points where litter becomes trapped are:

_____ 1. bases of fences and walls

_____ 2. moving vehicles

_____ 3. grassy and planted areas

_____ 4. tops of sloped roofs

C. Some types of litter that one may find in Hawaii are:

_____ 1. wrappers

_____ 2. boats

_____ 3. moving cars

_____ 4. beverage cans

D. Litter means:

_____ 1. containerized solid waste

_____ 2. trash that is in a can

_____ 3. uncontainerized solid waste

_____ 4. solid waste that is out of the stream in which it belongs

E. Some people may litter because

_____ 1. they are conscious about cleanliness in their environment

_____ 2. they are lazy

_____ 3. they are careless

_____ 4. they are concerned about their surroundings

F. Some practices necessary to control litter not only include motorists using litter containers but also include:

_____ 1. pedestrians holding discards that will later be thrown on the ground

_____ 2. drivers of open trucks that transport loose materials making sure they are not covered

_____ 3. pedestrians/picnickers holding discards for proper receptacles

_____ 4. contractors providing and making sure of the use of adequate, suitable containers for residue

II. MATCHING: PLACE THE LETTER THAT MATCHES THE ANSWER IN THE SPACE PROVIDED.

a. sources	e. litter bag	i. pick up
b. dispose	f. refuse truck	j. garbage
c. refuse	g. sanitary	k. filthy
d. litter	h. highways	l. untidy

_____ 1. not clean; very dirty

_____ 2. a place for storing waste in the car

_____ 3. that which is garbage, rubbish, junk and litter

_____ 4. to reach down and get

_____ 5. free from dirt; healthy and clean

_____ 6. waste food

_____ 7. to get rid of

_____ 8. a vehicle that picks up trash

_____ 9. uncontainerized solid waste

_____10. messy; not neat

III. MATCHING; MATCH THE DEFINITION FROM COLUMN B WITH ITS TERM IN COLUMN A.

Column A	Column B
_____ 1. litter	a. A container used for the collection of litter.
_____ 2. Origin	b. Anything considered useless or worthless.
_____ 3. lodge	c. The act or process of getting rid of unwanted materials.
_____ 4. habit	

Column A	Column B
_____ 5. disposal	d. Refuse, trash and food waste.
_____ 6. receptacle	e. The act of training, developing or cultivating knowledge.
_____ 7. litterbug	f. Scattered, uncontainerized solid waste.
_____ 8. ecology	g. The means employed to provide objects necessary for human survival and comfort.
_____ 9. littering	h. All the objects, persons, and conditions in the surroundings.
_____ 10. sanitation	i. The source from which anything comes.
_____ 11. education	j. The act of carelessly discarding waste.
_____ 12. technology	k. To get caught or stay in a place; to trap.
_____ 13. environment	l. In the United States a person who throws trash along a highway, on a sidewalk, in a park, etc.
	m. The tendency to repeat a certain pattern of behavior without thinking about the act.
	n. The study of the environment.
	o. The maintenance of cleanliness and healthful living conditions.

IV. TRUE OR FALSE: IF THE STATEMENT IS TRUE, WRITE T IN THE SPACE PROVIDED; IF IT IS FALSE, WRITE F.

_____ 1. Traffic is a factor in the spread of litter.

_____ 2. Litter is human-made uncontainerized liquid waste.

_____ 3. There are no laws in the State of Hawaii for littering.

_____ 4. Changing the public's attidues, habits and practices as they relate to littering is important in reducing the litter problem.

_____ 5. Litter can be in the form of gas, liquid or solid.

_____ 6. Depositing trash on public property except in a proper container is an offense in the State of Hawaii.

_____ 7. All trash is litter.

_____ 8. All trash that is in one's possession is not litter.

_____ 9. Pedestrians and motorists are the only sources of litter.

_____10. Sweeping up loose litter and containerizing it as it accumulates helps to halt the spread of litter.

_____11. People are less likely to litter in a clean area than in one which is dirty.

_____12. Well-designed litter cans always produce significant reductions in litter.

_____13. Abandoned autos, clogged sewers, trash out of containers and trashy construction sites are some conditions affecting litter control.

_____14. People usually will only pick up litter in areas that they feel they "own" or that "belong to them" in some way.

V. ATTITUDINAL QUESTIONS FOR PRE- AND POST-TEST

These questions may be used as part of the pre- and post-test or as an entirely separate test. Select the letter of the answer that you feel is the best choice.

1. You are walking home after school with a couple of your friends. The three of you are eating ice cream sandwiches. Your two friends throw their ice cream sandwich wrappers in some nearby bushes that already have a lot of rubbish. You don't see any litter receptacle around, so you:

    a. Drop your wrapper on the ground.

    b. Ask your friends not to litter and to pick up and hold their wrappers until they find a litter receptacle, even if it means holding on to the wrappers until they get home.

    c. Look around first to see that no one's watching you, then throw your wrapper in the bushes.

    d. Say nothing to your friends, but hold on to your wrapper until you come across a litter receptacle, even if it means holding on to it until you get home.

2. You are at a picnic and it just ended. There's litter on the ground. Some of the litter was caused by your picnic and the rest of the litter was on the ground before you came. Before everyone goes home, you:

    a. Suggest that everyone picks up all the litter in the area before leaving.

b. Clean up some of the litter by yourself.

c. Do nothing because the park janitor will clean it up.

d. Clean up only the litter from your picnic.

3. You are riding in a car with some friends. You are sitting in the front seat on the passenger side with your window open. There's no litter bag in the car and the car doesn't have a back seat window that opens. Your friend in the back seat is eating some candy and gives you the candy wrapper to throw out the window. You:

   a. Throw the wrapper out the window.

   b. Ask your friend to leave the wrapper on the car floor.

   c. Take your friend's wrapper and hold on to it until you stop at a place that has a litter receptacle.

   d. Look around to check that other cars aren't near by, then throw the wrapper out the window.

   e. Ask your friend to hold on to the wrapper until you stop at a place that has a litter receptacle.

4. You are at the beach with your younger brother or sister. Your brother or sister unwraps a piece of chewing gum and throws the wrapper on the ground. You:

   a. Pick up the wrapper and throw it away in the nearest litter receptacle.

   b. Do nothing. It's such a small piece of rubbish that it doesn't matter.

   c. Ask your brother or sister to pick up the wrapper and throw it away in the nearest litter receptacle.

   d. Do nothing. The groundskeeper will clean it up.

5. You pass by a stream in your neighborhood that has a lot of litter along its sides and in the water. You:

   a. Report it to the State Litter Control Program.

   b. Get together with some of your friends to clean it up.

   c. Do nothing because people will still litter in it anyway even after it gets cleaned up.

   d. Do nothing because you did not cause the litter.

6. You are at a picnic. You just finished eating your lunch and you want to get rid of your rubbish. There's only one rubbish can in the area and it's already filled. Your friends are trying to squash their lunch rubbish in the filled can but it's a windy day, and some of the rubbish is spilling on the ground. You notice that another group of picnickers nearby are putting their rubbish in a litter bag that they brought. You:

    a. Pick up the spilled rubbish and try to squash it and your own rubbish in the can.

    b. Go over to the other group of picnickers and ask them if they have an extra litter bag you could use.

    c. Gather the spilled rubbish into a neat pile on the ground next to the can and place your own rubbish there.

    d. Put your rubbish in some nearby bushes so it won't blow away.

ANSWERS TO PRE- AND POST-TEST

I. COMPLETION:

A. Elements which cause litter to spread from one point to another are:

3 and 4

B. Lodging points where litter becomes trapped are:

1 and 3

C. Some types of litter that one may find in Hawaii are:

1 and 4

D. Litter means:

3 and 4

E. Some people may litter because:

2 and 3

F. Some practices necessary to control litter not only include motorists using litter containers but also include:

3 and 4

II. Matching:

1.	k	6.	j
2.	e	7.	b
3.	c	8.	f
4.	i	9.	d
5.	g	10.	l

III. Matching:

1.	f	8.	n
2.	i	9.	j
3.	k	10.	o
4.	m	11.	e
5.	c	12.	g
6.	a	13.	h
7.	l		

IV. True or False:

1.	T	8.	T
2.	F	9.	F
3.	F	10.	T
4.	T	11.	T
5.	F	12.	F
6.	T	13.	T
7.	F	14.	T

V.

1.	b
2.	a
3.	e
4.	c
5.	a or b
6.	b

Chapter III

THE LITTER PROBLEM

This chapter provides an analysis of the litter problem including descriptions of the various aspects of the problem, the actions necessary to reduce litter, and the State of Hawaii's approach to the problem.

The Content of Litter

A generally-accepted description of litter is that it is human-made solid waste which is not where it belongs - in containers.

Look around closely and find items that fit this description at various locations, such as:

- Beaches
- Streets
- Sidewalks
- Alleys
- Driveways
- Yards
- Parks
- Playgrounds
- School grounds
- Parking lots
- Vacant lots
- Boat harbors
- Rural lands
- Reef areas

Studies have shown that the uncontainerized solid waste found in abundance at these locations covers a wide range. In fact, there are one hundred fifty (150) separate items that can be classified in five groups as to content. These groups and sample items are listed below.

Paper

Advertising materials: circulars, handbills, posters, signs
Containers: bags, cartons, boxes, cups
Entertainment materials: sports and theater programs, tickets
Household items: lists, cleansing tissues, napkins, receipts
Office supplies: invoices, memorandums, folders, scrap paper
Reading materials: newspapers, magazines, paperbacks, books
Shipping materials: corrugated paper, shredded paper, wrappings
Smoking products: cigarette packages, match books
Wrappers: candy, ice cream, foods
Writing materials: envelopes, stationery, postcards

Metal

Automotive parts: hub caps, tire rims, mufflers
Beauty aids: curlers, lipsticks, compacts
Building materials: hardware, pails, stripping
Containers: cans, tubes
Household items: appliances, furniture

Plastic

Beauty aids: combs, accessories

Containers: bottles, jars, bags, cartons

Wrappings: food, gifts, household items

Glass

Containers: bottles, jars

Household items: light bulbs, window panes

Miscellaneous

Automotive parts: tires, inner tubes, floor mats

Building materials: boards, bricks, shingles, residue

Cleaning materials: rags, sponges, brushes, brooms, mops

Food: peelings, rinds, cores, bones, miscellaneous leftovers

Horticultural items: branches, cuttings, flower pots

Household items: mattresses, furniture

Smoking products: cigarette butts, cigar butts

Sporting goods: tennis, golf and beach balls, baseball gloves

Toys and games: balloons, dolls, stuffed animals

Wearing apparel: gloves, scarves, shoes, hosiery, ties, hats

What comes into focus from this list is that litter's content is the spectrum of items society uses in the daily process of living.

The Constant Cycle

Until early in this decade, it commonly was assumed all litter came from two sources:

1. Pedestrians discarding materials along streets and at parks and recreational areas.

2. Motorists and passengers throwing materials from vehicles (including boats).

Analysis of litter content made it increasingly clear, however, that a lot had to be coming from sources other than pedestrians and motorists. In 1971-72, a research project sponsored by the United States Brewers Association set out to identify these other sources. It covered 105 cities of all sizes in 17 states representing almost half of the nation's population. Studies of litter for clues to what was responsible for litter led to these findings:

1. In residential neighborhoods, there was careless disposal of refuse at more than half the houses. Overloaded containers, uncovered containers and loose materials placed beside containers were creating litter throughout entire blocks.

2. Similar practices and conditions prevailed at more than one third of the commercial establishments observed.

3. Approximately seven out of ten loading and unloading areas were littered with wrappings, packing materials and other debris from the operations there.

4. Along roads they normally traveled, uncovered trucks were creating almost one fifth of the litter.

5. In some communities, as many as three out of four construction projects were serious producers of litter in the form of residue and worker lunchtime and coffee-break discards.

Thus, the fact surfaced that there actually are seven sources of litter:

1. Pedestrians/picnickers
2. Motorists/boaters
3. Household refuse
4. Commercial refuse
5. Loading and unloading operations
6. Uncovered trucks
7. Construction projects

Continuing observations confirm that, as is true elsewhere, all seven of these sources are responsible for litter in Hawaii. In our state, improper disposal of food and drink containers, smoking materials and the dumping of unwanted household goods and cars creates unsightly and unhealthy litter problems in parks, beaches and areas that should provide the most enjoyment. Even reef areas below the water level have been used as dumping grounds by beachgoers and boating enthusiasts.

Dynamics at Work

Litter control would be easier if a large percentage of trash was not moved from its source.

Four elements give it mobility. Surveys have found that paper and other light objects frequently travel six to eight blocks from where they originated. Significantly, a single item may be observed by as many as 500 persons as it makes its journey. Factors beyond our control that make litter control difficult are:

1. WIND. It is the main carrier along and across smooth surfaces: streets, sidewalks, alleys, parking lots, other paved areas, beaches, and open grassy areas.

2. WATER. A common belief is that heavy rains, streams, ocean waves, and currents get rid of a great deal of litter by causing it to disintegrate. Actually, depending on the surfaces, they merely transfer much of it from one location to another with catch basins getting a large share.

3. TRAFFIC. Movement of feet and cars have been observed taking litter on 17 round trips between sidewalks and streets while pushing it along adjacent blocks.

4. ANIMALS. Exposed refuse provides convenient opportunities for loose dogs and cats, mongooses, and rats to be regular carriers along paths they consistently prowl.

While some of the traveling litter is swept up along the way, a substantial portion is not. It keeps going until it finally becomes trapped at such locations as:

- Beaches against walls and rocks
- Fence and wall bases
- Grassy and planted areas
- Embankments
- Catch basins and piers
- Strips between curbs and sidewalks
- Vacant lots
- Reef areas against rocks and coral heads

Unfortunately, even where a conscientious effort is made by people to clean regularly, a prevalent practice is to clean only smooth surfaces and to let trapped litter accumulate for long periods.

Studies of dates on receipts, newspapers, and envelope postmarks have shown that some have been in piles of litter for as long as six years. This explains why, in most areas, trapped litter is a high percentage of the litter in constant evidence.

Thus, unless effective steps are taken to change it, the litter cycle is perpetual. It begins with a continuous, converging flow from the seven sources. Four elements combine to widen this flow. Repeated cleaning siphons off part of it. The rest is deposited in traps where it builds up until finally removed, making way for new accumulations.

The Negative Effects

Over the years, the aesthetic factor has been offered as the main reason for doing something about litter. Today other factors are gaining more prominence. For one thing, it is clear that litter is a financial drain on hard-pressed, taxpayer-supported state and municipal budgets. Untold hours of work and dollars are required for:

- Custodial staffs to carry on the never-ending task of trying to keep school buildings and grounds clean.

- Federal and state government crews to clean the same vacant lots, roadways, harbors, streams and beaches over and over and inspect construction and demolition sites.

- City and County parks and recreation department employees to perform the daily assignment of removing litter from parks, playgrounds, beaches and other recreational areas.

Citizens demand this cleaning. At no time of the year is there a let-up in complaints from the public about littered conditions the public itself creates. So it is necessary to spend millions of dollars in a frustrating attempt to deal with a negative--litter. This is money that could be used for an infinite number of positive purposes such as helping to hold the line against rising costs of local and state governments.

On another score the fact that accumulations of flammable litter are definite fire hazards is well established. Fires that result from spontaneous combustion and carelessness can be reduced if people are more careful about their litter habits.

There is also the matter of health. Exposed refuse is the greatest single attraction to rats, flies, roaches, and other insects. Moreover, piles of paper give rodents one of their favorite hiding places.

Two other points should be made:

1. Litter plays a role in furthering neighborhood decay.

2. Litter carried in runoffs adds to stream and ocean pollution.

There are, then, practical reasons for doing something about the litter problem.

Why Does It Happen?

Psychologists and others have devoted considerable attention to the reasons people litter. Among their principal conclusions are the following:

1. Laziness

   This manifests itself in a number of ways. Not going a few steps out of the way to use a public litter receptacle, not taking the trouble to clean up spillage from overloaded refuse containers, and not bothering to containerize loading and unloading debris.

2. Carelessness

   This, too, is reflected in different ways. Tossing litter at receptacles instead of into them, leaving lids off refuse containers, and covering only parts of trucks loaded with loose materials.

3. Lack of Awareness

   This is the case with many pedestrians. They automatically discard litter on the ground without thinking and without really being aware of contributing significantly to a problem. It is part of a long-established habit pattern.

4. Inadequate Litter Receptacles

   Many persons have a compulsion to get rid of wrappers, containers and other items the instant they have served their purpose. If receptacles are immediately handy, they will use them. Otherwise the materials end up on the ground. Obviously, it is advantageous to have as many receptacles as possible and to locate them where recurring litter indicates they will do the most good.

5. Peer Influence

Some years back, a pilot school research project conducted by Bridgeport Public Schools, Bridgeport, Connecticut found that there was a tendency for children, responsive to litter-control education in the early grades, to abandon their good disposal practices as they progressed through the higher grades* The rationale was that as they grew increasingly conscious of their elders' littering habits they became followers.

6. Disregard for Others' Property

Many individuals have a tendency to respect what they themselves own, but to have a different attitude about what belongs to somebody else. They have little compunction about littering anywhere other than at their own homes.

7. Apathy

The evidence is that surprising numbers of persons accept litter as a way of life. Much of this can be attributed to not being exposed to sound arguments in favor of clean surroundings and to the philosophy of accepting individual responsibility for them.

8. Lack of a Sense of Responsibility

Many also rationalize that as long as employees are paid to clean public or other properties, there is nothing wrong with littering them; in other words, litter is expected of them. This accounts in significant measure for the constant need to clean streets, amusement parks, picnic areas, shopping centers, government properties and the like.

9. Lack of Discipline

The public usually knows when laws are not enforced regularly or seriously. Where and when this is true with regard to laws applying to litter, a situation is created wherein there is little fear of being apprehended, and littering goes on unabated.

10. Lack of Training

Many individuals have not been made conscious of the negative effects of litter and of how they, as individuals, contribute to the problems it causes.

ACTIONS NECESSARY TO REDUCE LITTER

To consider what causes the prevalence of litter in Hawaii is to conclude that three things must take place in order for this condition to change:

1. The flow must be stemmed from the seven sources.

2. The spread must be halted.

3. The traps must be cleaned up and kept clean.

* Study performed in the Bridgeport Public Schools, Bridgeport, Connecticut in the early 1970's (see page A1)

It is important then to examine what is involved in achieving these objectives.

1. Stemming the Flow

Since different factors and situations prevail with respect to each source, they are covered individually here.

A. Pedestrians-Picnickers

Obviously, the key to controlling pedestrian-picnicker litter is for people to hold discards for proper containers. Several islands have initiated "Litter Stop" programs that provide for large, 3 cubic yard dumpsters to be placed in convenient, well used sites around the islands. Private businesses are sponsoring these projects as a community service. Also, since June 30, 1979, minimum numbers of litter receptacles are required at certain public places under Public Health Regulations, Chapter 51. But it is still necessary for citizens to do three things:

(1.) Before discarding litter, look around to see whether there is a receptacle anywhere in the vicinity. If so, deposit it in the receptacle.

(2.) If no receptacle is in sight, pocket the discard for later disposal in a proper container.

(3.) When picnicking, get in the habit of taking along large plastic bags and leave your tied full bag in or next to the park containers.

B. Motorists/Boaters

In studies by litter experts, the following observations have been made:

(1.) Four out of five drivers who have litter containers in their cars generally use them for their discards.

(2.) Where containers are visible in the cars, the tendency is for passengers to use them also.

(3.) Fewer than one of every five cars has a container in it.

These figures suggest that littering by motorists/boaters will decrease as the number of drivers who carry containers in their cars/boats increases. Hence, an objective should be to get them into more cars/boats. The value of doing so is illustrated by this simple calculation:

> For every 1,000 vehicles in which just five items are put into car containers over a given weekend, there are 5,000 fewer pieces of litter on the streets and elsewhere that Sunday night.

Inexpensive litterbags can be purchased for cars and boats at variety stores and similar retail outlets or auto supply stores. Just a plain bag will do, and there are interesting possibilities in decorating ordinary bags for the purpose.

C. Household Refuse

Careless refuse disposal is the largest single source of litter in residential neighborhoods. It is responsible for most of what constantly has to be cleaned from alleys and for much of what is on streets adjacent to alleys. Households that do not have enough trash containers to meet their needs often create illegal dumps in rural areas and access roads as a means of ridding themselves of trash.

Because of the high degree of illegal dumping and careless disposal practices, a substantial part of refuse budgets is spent on cleaning up. These monies could be put to other uses if more residents would follow these practices:

(1.) Have sufficient containers to handle the volume of refuse they produce.

(2.) Load containers carefully to avoid hardpacking and overflowing. (These add to litter by making it difficult for collection crews to empty contents without additional spillage.)

(3.) Keep containers covered.

(4.) Securely package or tie loose excess materials that result from unusual circumstances, such as holidays.

(5.) Discourage foraging animals by putting a tablespoon of household ammonia in each plastic bag before tying it, and making sure it is tied tightly.

(6.) Call your City and County Bulky Item Collection Service for pick-up of large items.

(7.) Acquaint yourself with your city and county refuse ordinances and follow them.

(8.) Call the Abandoned Car section of your Police Department to report abandoned and derelict cars.

There is something else to consider. Following the practices that have been listed would also make it possible to hold the line against rising costs for household refuse collection. Since it takes longer to collect refuse that is improperly containerized, improving containerization practices would speed the collection process making it less costly and more efficient.

D. Commercial Refuse

To observe commercial sections of Hawaii is to note numerous instances of overloaded, uncovered containers, with resultant litter scattered not only on the immediate premises but on nearby streets and other properties. Much of the problem is due to lack of adequate container capacity on the premises and/or lack of regular collection service by the private licensed contractors.

This situation can be remedied with the full cooperation from commercial enterprises. Owners and managers of these enterprises must adopt the same disposal practices that have been listed in connection with residents.

E. Loading And Unloading Operations

The nature of these operations is such that they normally have to be carried on rapidly in order to minimize worktime, use of space, and traffic obstructions.

Unfortunately, it is not always feasible to have and use on-the-spot containers for immediate disposal of wrappings, wires, cord, and other residue that is part and parcel of the work, but wherever this is practical, such a procedure should be followed. In any case, it is important, in the interest of controlling litter created at and scattered from these areas, to have a policy of end-of-working-day cleanup of any debris that has not been containerized.

F. Uncovered Trucks

Along with creating litter, uncovered trucks transporting loose materials present three kinds of hazards:

(1.) Small particles, such as dust, can cause damage to the eyes of pedestrians and motorists.

(2.) Larger objects can injure pedestrians and cause damage to cars by falling on them.

(3.) Larger objects also can cause accidents by falling in the paths of cars.

Thus there is a combination of reasons for making sure proper covering prevents materials from flying, spilling or dropping off in the course of hauling.

G. Construction Projects

Wherever building takes place, two litter-producing factors are in the picture:

(1.) Creation of normal residue from unpacking and use of construction materials.

(2.) Worker discards of lunchtime - coffee-break wrappings, paper cups, paper napkins, etc.

As with loading and unloading operations, it is important that on-the-spot containers for these materials be provided and used wherever feasible and that there be end-of-working-day cleanup of any litter that has not been containerized.

2. Halting the Spread

The key to immobilizing the four dynamics which cause litter to move is to sweep or pick it up as it begins accumulating on smooth surfaces and in open areas. In doing so, the practice of creating "perpetual" litter should be avoided. This is what results from pushing it from one place to another, such as from sidewalks to streets and from beaches to reef areas and harbors.

3. Dealing with the Traps

The first need is to get rid of already--existing accumulations at the types of locations listed earlier. The second is to watch these locations thenceforth and to keep accumulations from recurring by removing litter as it becomes lodged there.

SYSTEMATIC APPROACH TO THE PROBLEM

The State Litter Control Program

The necessary actions that have been outlined bring into focus the need for a systematic approach to the litter problem, with four interlocking components:

1. Adequate statutes and ordinances that set forth basic rules for citizens to follow.

2. Modern technology to facilitate proper containerization (public litter receptacles, efficient refuse collection methods, etc.).

3. Continuous education to create and maintain a public climate in which people want clean surroundings and accept individual responsibility for helping to achieve them.

4. Serious enforcement to back up the above three.

These components are the heart of a program now in effect in this state under direction of the State of Hawaii Litter Control Program. This program was established by the Director of Health on August 1, 1977 to carry out Act 2 of the 1977 First Special Legislative Session. The purpose of this act which was signed into law by Governor George R. Ariyoshi on June 16, 1977, is to "reduce the amount of litter in Hawaii".

A State Litter Control Plan, adopted in January, 1978, outlines the mechanisms to be used by the Litter Control Program (LCP) to reduce litter in the State of Hawaii. The Plan includes the following program elements:

1. Litter Hotline: litter hotline numbers are used to report littered areas which are investigated by the LCP.

2. Litter Cleanup Crews: volunteer and government cleanup crews pick up litter at sites reported to the Litter Hotline.

3. Statewide Cleanup Campaigns: annual cleanup campaigns are conducted each April to reduce a significant portion of the litter and focus public attention on the litter problem.

4. Provide Litter Receptacles (PLR) Program: contributions of litter receptacles and servicing are sought from the business community.

5. Vehicle Litter Watch: citizens report to the Litter Hotline the license plate or registration numbers of motor vehicles or boats littering on public property. Vehicle owners are notified of the reported violation.

6. Recycling Program: the program promotes the recycling of paper, cans, and recyclable bottles.

7. Public Education and Awareness Program: television and radio public service announcements, brochures, posters, coloring sheets, a slide and tape show, and a newsletter are utilized to educate and to make the public aware of the litter problem and what they can do to reduce it.

8. Litter Education in the Schools: a litter curriculum and accompanying materials have been developed for elementary and secondary grade levels.

9. Workshop Program: workshops are conducted for public agencies, civic and service groups, community and business organizations, and other interested groups to inform them of the litter problem and encourage positive action to eliminate litter.

10. Litter Survey Program: item-count surveys and litter attitude and awareness surveys are conducted to measure the litter problem, effectiveness of the LCP, and changing public attitudes regarding litter.

11. Volunteer Litter Inspector Program: volunteers identify littered areas in their community and analyze the litter found there to determine the sources and propose steps for removal of the sources.

12. Monthly Newsletter: litter control projects and community activities are communicated to individuals and heads of all organizations and agencies in the state.

A State Interdepartmental Committee composed of representatives from litter-related state departments was established in March, 1978, to assist the LCP in implementing the Litter Control Plan. The Committee coordinates the agency litter control activities. The LCP is also promoting an interdepartmental committee for each county and coordinating litter control activities with the county agencies.

Additional information on the Litter Control Program may be obtained from:

Litter Control Program
Department of Health
1250 Punchbowl Street, Room 123
Honolulu, Hawaii 96801

Telephone (Oahu) 548-3400

The Governor's Advisory Committee on Litter Control

On July 26, 1977, Governor George R. Ariyoshi established the State Advisory Committee on Litter Control. The Committee, representing a broad cross section of the community, works closely with the Litter Control Program to implement the Litter Control Plan.

The work of the Committee includes the following areas:

1. Legislative and Enforcement:

   a. Review existing state and county laws, ordinances, and regulations and recommend changes.

   b. Review efforts of the police, courts, public prosecutor, attorney general, and other enforcement agencies and recommend changes to expedite cooperation and enforcement.

2. Government Service:

   Review and recommend specific measures that state, federal and county agencies can implement to improve refuse handling systems, i.e. more trash containers at bus stops and tourist sites, additional pick-up services, etc.

3. Public Education and Awareness:

   Review and recommend specific programs to promote the anti-litter ethic and cleanup efforts within the school system and before the general public. Included are mass media advertising, promotional spots and materials.

4. Special Projects:

   Set up special projects such as privately sponsored roadside dumpsters, to establish highway signs promoting the anti-litter ethic, and to set up a sponsorship plan for promotion and distribution of car litter bags, etc.

5. Resource:

   Solicit sponsors and/or sources of litter bags, trucks, refreshments, and special equipment for voluntary cleanup efforts or special activities throughout the year.

6. Communications:

Maintain contact with voluntary groups, businesses and other cleanup project participants to encourage cleanups and other litter control related activities within the community.

Chapter IV

INSTRUCTIONAL GUIDELINES

This chapter sets forth instructional guidelines covering twelve lessons which are designed to promote attainment of the learning objectives originally listed in Chapter Two. For each lesson learning content, instructional activities, and assessment tasks have been delineated.

LEARNING OBJECTIVE 1.0

1.0 Students will be able to identify and define the term litter.

	Learning Content	Instructional Activities	Assessment Tasks
1.0	Litter definition	Have students state their ideas of a definition of the term litter.	Students will select from a set of cards a correct definition of litter.
	1.01 Uncontainerized solid waste.		
	1.02 Solid waste out of the place in which it belongs.		
1.1		Record statements on chalkboard.	Students will orally state a definition of litter.
1.2		Allow time for students to react quickly to the various definitions.	Students will write a correct definition of litter.
1.3		Assign students to research the dictionary and read to the class a suitable definition of litter.	
1.4		Write the definitions of litter on the chalkboard and discuss.	
1.5		Have students record in their notebooks the definitions of litter.	

LEARNING OBJECTIVE 2.0

2.0 Students will be able to distinguish litter from non-litter and name five different types of materials that become litter.

	Learning Content	Instructional Activities	Assessment Tasks
2.0	General classification of litter.	Have students look at pictures of the different types of materials that comprise litter.	Each student will bring in two types of litter materials and discuss them with the class.
		2.0.1 Have students react to the pictures.	
		2.0.2 Have students group pictures into the classes of litter.	
	2.1 Paper	Give students a list of materials that become litter.	Students will state orally five types of materials that become litter.
	2.1.1 Advertising materials		
	2.1.2 Containers		
	2.1.3 Entertainment materials		
	2.1.4 Household items		
	2.1.5 Office supplies		
	2.1.6 Educational materials		
	2.1.7 Packing		

LEARNING OBJECTIVE 2.0 (CONT'D)

Learning Content	Instructional Activities	Assessment Tasks
2.1.8 Informational publications		
2.1.9 Reading materials		
2.1.10 Shipping materials		
2.1.11 Smoking products		
2.1.12 Wrappers		
2.1.13 Writing materials		
2.2 Metal	Have students identify the various types of litter they see as they travel through their neighborhoods.	Students will write the names of five types of materials that become litter.
2.2.1 Automotive parts		
2.2.2 Beauty aids		
2.2.3 Building materials		
2.2.4 Containers		
2.2.5 Household items		
2.2.6 Bicycle parts		
2.3 Plastic	Instructor and students will view and discuss the slide presentation on litter available from the Litter Control Program. From the presentation Students will be able to distinguish five types of litter.	Instructor will place various groups of litter materials around the classroom. Some of the materials will be containerized; and some will not. Number each group or item. Students will write in order the items that are considered litter and those items that are not.
2.3.1 Beauty aids		
2.3.2 Containers		
2.3.3 Wrappings		
2.4 Glass		
2.4.1 Containers		
2.4.2 Household items		
2.5 Miscellaneous		
2.5.1 Automotive parts		
2.5.2 Building materials		
2.5.3 Cleaning materials		
2.5.4 Food		
2.5.5 Horticultural items		
2.5.6 Household items		
2.5.7 Smoking products		
2.5.8 Sporting goods		
2.5.9 Toys and games		
2.5.10 Wearing apparel		

LEARNING OBJECTIVE 3.0

3.0 Students will be able to identify the seven sources of litter.

	Learning Content	Instructional Activities	Assessment Tasks
3.0	Sources of litter	Display a chart and/or write on a chalkboard the seven sources of litter in bold letters. Teacher will discuss the seven sources and groups who contribute to the increasing production of litter.	Students will orally identify the seven sources of litter.
	3.1 Pedestrians/picnickers		
	3.2 Motorists/boaters		
	3.3. Household refuse		
	3.4 Commercial refuse		
	3.5 Loading and unloading operations		
	3.6 Uncovered trucks		
	3.7 Construction projects		
3.1			Students will make a collage showing each of the seven sources of litter.
3.2			Students will write the seven sources of litter.
3.3			Students will correctly point out the seven sources of litter from a group of 15 pictures.

LEARNING OBJECTIVE 4.0

4.0 Students will be able to identify and describe the four elements that cause litter to spread.

	Learning Content	Instructional Activities	Assessment Tasks
4.0	Factors that cause litter to spread.	Divide the class into groups of five. Give each group one Cooperation Squares Puzzle (See page E24)	
	4.1 Wind		
	4.2 Water	4.0.1 Have large group interaction to gain feedback from the small group sessions.	
	4.3 Moving traffic		
	4.4 Animals		
4.1		Plan a field trip through the neighborhood to give students firsthand experience in seeing the dynamics of litter.	
4.2.			Students will pantomime the four elements that cause litter to spread.

LEARNING OBJECTIVE 5.0

5.0 Students will be able to identify and describe five locations where litter becomes trapped.

	Learning Content	Instructional Activities	Assessment Tasks
5.0	Areas where litter becomes trapped	Have students quietly tour the school to note the quantity of litter in the corridors and on the school grounds. Assign committee of students to complete the checklist.	Students will write a paragraph on their findings.
	5.01 Bases of fences and walls		
	5.02 Grassy and planted areas		
	5.03 Embankments		
	5.04 Catch basins and piers		
	5.05 Vacant lots		
	5.06 Strips between streets and sidewalks		
	5.07 Beaches against walls and rocks		
	5.08 Reef areas against rocks and coral heads		
5.1		Take the class on a field trip through the neighborhood to locate different places where litter becomes trapped.	Students will orally describe and discuss five locations where litter becomes trapped.
		5.1.1 Have students discuss areas visited where litter had accumulated.	
		5.1.2 Have students write a paper on their findings and give oral reports to the class.	
5.2			Students will write five locations where litter becomes trapped.
5.3			Students will identify the classroom that needs focused attention in the control of litter.
			5.3.1 On a weekly basis a student committee will evaluate each classroom to determine the conditions of cleanliness.
			5.3.2 Based on the judgment of the committee the classroom with the least amount of litter is awarded a school banner.

LEARNING OBJECTIVE 6.0

6.0 Students will be able to identify and describe 10 reasons why people litter.

	Learning Content	Instructional Activities	Assessment Tasks
6.0	Some reasons why people litter.	Have students develop a questionnaire for use in their neighborhoods on why people litter.	Students will state orally five reasons why people litter.
	6.01 Laziness	6.0.1 Have students do a school survey.	
	6.02 Carelessness	6.0.2 Have students do a neighborhood survey.	
	6.03 Lack of awareness	6.0.3 Have students do a bar graph of the survey after it has been completed.	
	6.04 Inadequate litter receptacles		
	6.05 Peer influence		
	6.06 Disregard for others' property		
	6.07 Apathy		
	6.08 Lack of sense of responsibility		
	6.09 Lack of discipline		
	6.10 Lack of training		
6.1		Have students "brainstorm" and discuss their ideas on why people litter.	Students will write five reasons why people litter.
		6.1.1 Use tape recorder to record their ideas.	
		6.1.2 Write their ideas on a chalkboard.	
		6.1.3 Have students record in their notebooks reasons why people litter.	
6.2			Students will take a true or false test in which they will identify the correct statements.
6.3			Students will locate words arranged horizontally, vertically, diagonally, forward or backward in a seek-a-word puzzle.

LEARNING OBJECTIVE 7.0

7.0 Students will be able to name and describe the hazards of litter.

Learning Content	Instructional Activities	Assessment Tasks
7.0 Some hazards of litter.	Have students discuss the hazards of litter.	Students will orally name the hazards of litter.
	7.0.1 Have group discussion with students and record their ideas.	
7.1 Health related	Give each student a ditto copy of 25 scrambled terms.(See page E19)	Students will write the hazards of litter.
7.1.1 Litter can cause serious accidents resulting in bruises, cuts, sprains and broken bones.	7.1.1 Have students correctly unscramble these terms.	
7.1.2 It attracts and harbors rodents, roaches, flies and other insects.	7.1.2 Have student use the dictionary to define the 25 unscrambled terms.	
7.2 Fire related	Invite the school nurse, a physical education teacher, Fire Department representative or other resource personnel to discuss some of the hazards of litter.	Students will take a matching quiz on the 25 unscrambled terms
7.2.1 Piles of dry litter ignite easily..		
7.2.2 Piles of litter cause fires to spread rapidly.		
7.3		Students will take a vocabulary test choosing the word that best fits the definition.

LEARNING OBJECTIVE 8.0

8.0 Students will be able to list and describe five actions necessary for the control of litter.

Learning Content	Instructional Activities	Assessment Tasks
8.0 Actions to control litter.	Give students a list of the actions necessary to control litter.	Students will orally name five actions for the control of litter.
	8.0.1 Divide students into groups of six in order that they may discuss each action	
	8.0.2 Have students interact and share ideas with the group.	
8.1 Stemming the flow from the sources.		
8.1.1 Pedestrians/picnickers hold discards for proper receptacles		

LEARNING OBJECTIVE 8.0 (CONT'D)

Learning Content	Instructional Activities	Assessment Tasks
8.1.2 Motorists/boaters use litter containers or bags		
8.1.3 Householders follow careful putout practices		
8.1.3.1 Having enough containers		
8.1.3.2 Keeping them covered		
8.1.3.3 Securely tying loose excess materials		
8.1.3.4 Disposing of unwanted appliances and other large items as prescribed by City and County ordinances		
8.1.4 Owners and managers of commercial establishments follow the practices listed for householders		
8.1.5 Overseers of loading and unloading operations provide adequate, suitable containers and make sure they are used		
8.1.6 Operators and drivers of trucks transporting loose materials make sure they are suitably covered		
8.1.7 Contractors provide and make sure of the use of adequate, suitable containers for residue and discards		
8.2 Halting the spread of litter.		
8.2.1 Sweeping up loose litter as it accumulates		

LEARNING OBJECTIVE 8.0 (CONT'D)

Learning Content	Instructional Activities	Assessment Tasks
8.2.2 Avoiding the creation of "perpetual" litter that results from its moving from one site to another, as from sidewalks to streets		
8.3 Cleaning up the traps and keeping them clean		

LEARNING OBJECTIVE 9.0

9.0 Students will be able to list and describe one responsibility and one function for each of the litter control agencies.

Learning Content	Instructional Activities	Assessment Tasks
9.0 Agencies for the control of litter.	Give students a copy of the responsibilities and functions of litter control agencies.	Students will give orally the names of litter control agencies for the State of Hawaii.
	9.0.1 Have students read the copy.	9.0.1 Students will write the names of the litter control agencies for the State of Hawaii.
	9.0.2 Explain the duties and functions of each agency.	9.0.2 Students will state orally one responsibility and one function for each litter control agency for the State of Hawaii.
	9.0.3 Have students discuss the responsibilities and functions of litter control agencies.	
	9.0.4 Prepare and have students listen to a tape recording on the responsibilities and functions of litter control agencies.	9.0.3 Students will write one responsibility and one function for each of the litter control agencies for the State of Hawaii.
	9.0.5 Prepare and display a large chart of the agencies.	9.0.4 Students will play "Litter Bingo" page (E27) to reinforce vocabulary.

LEARNING OBJECTIVE 10.0

10.0 Students will be able to identify and describe the litter laws that affect people in the State of Hawaii.

	Learning Content	Instructional Activities	Assessment Tasks
10.0	Local regulations	Make and display a chart showing the agencies involved in litter control and state and local regulations for the control of litter in the State of Hawaii.	Students will write the litter regulations.
		10.0.1 Have students research the state and local regulations for each department.	
		10.0.2 Have students discuss the state and local regulations for each department.	
10.1		Arrange for a police officer to visit the class to discuss and describe the litter laws.	Students will orally state the litter regulations.
10.2		Have students prepare in advance five questions on the litter laws to ask the officer.	Students will write an essay on litter regulations of the State of Hawaii.

LEARNING OBJECTIVE 11.0

11.0 Students will be able to list and describe the procedure of the judiciary system in the State of Hawaii for handling litter violations.

	Learning Content	Instructional Activities	Assessment Tasks
11.0	Judiciary Procedure	Have students do a research project on the procedure of the judiciary for dealing with litter violations.	Students will write an essay on the procedure of the judiciary system in the State of Hawaii for dealing with litter violations.
11.1	Issuance of notices and citations	Have students visit a litter control agency for information on litter violations.	Students will state orally the procedure of the judiciary system in the State of Hawaii for dealing with a litter violation.
		11.1.1 Prepare students for a question and answer session with the staff.	
		11.1.2 Instruct students on procedures to follow when entering the courts and/or litter control agency.	
11.2	Roles of the Attorney General's and County Prosecutor's Offices.		Students will write the procedure of the judiciary system in the State of Hawaii for dealing with a litter violation.

LEARNING OBJECTIVE 11.0 (CONT'D)

	Learning Content	Instructional Activities	Assessment Tasks
11.3	Range of fines levied		Students will discuss and write an essay on their experiences at the litter control agency and/or the Courts.
11.4			Students will write and/or state orally the fines levied for litter violations in the State of Hawaii.

LEARNING OBJECTIVE 12.0

12.0 Students will be able to identify and describe the four components of litter control.

	Learning Content	Instructional Activities	Assessment Tasks
12.0	The four components of litter control.	Write the four components of litter control on a chalkboard.	Students will write the four components necessary to control and reduce the spread of litter.
12.1	Up-to-date ordinances	Have students write the four components of litter control in their notebooks.	Students will define the four components of litter control.
12.2	Modern technology	Have students use the dictionary to define each of the four components.	Students will state orally the four components that are necessary to reduce and control the spread of litter.
12.3	Continuous education	Have students discuss the four components and give their views on each.	Students will do a word puzzle (page E28) on the topic of litter.
12.4	Streamlined enforcement	Have students discuss what can be done to bring the litter problem under control.	
12.5			

APPENDIX

GLOSSARY

Air pollutants	Materials discharged into the air in large enough quantities to contaminate the atmosphere.
Attitude	A feeling or emotion toward someone or something.
Bacteria	Microscopic plants, some harmless, some harmful.
Baling	The act of reducing solid material into cube-like shapes by mechanical compression.
Citation	An official summons to appear (as before a court).
Classification	Arranging and sorting of waste materials into groups.
Collection Center	A place where one can take waste materials that have been separated.
Cooperating	The act of working together for a common goal.
Community	A body of people with common organization or interests or living in the same place under the same laws.
Compactor	A mechanical device that compresses solid waste into a smaller volume.
Conservation	The protection or preservation of something; planned management to prevent destruction or neglect.
Container	A receptacle or flexible covering for storage or shipment of goods.
Contamination	Making unfit for use by the introduction of unwholesome or undersirable elements.
Control	A method used to guide, influence, regulate, or direct a system.
Debris	The remains of waste materials.
Demolition Waste	Litter products from the destruction of buildings, roofs, sidewalks and construction sites.

Deterioration	Falling from higher or lower level in quality, character, or vitality.
Detrimental	Causing injury, damage or harm.
Disposal -	Getting rid of, discarding or throwing away of unwanted materials.
Dump	An oper land site where waste materials are burned, left to rot, rust, or simply deposited.
Ecology	The scientific study of human and non-human organisms, their relationship to their physical environment and to each other.
Embankment	A raised structure of earth.
Emergency	A condition that requires immediate action or attention.
Enforcement	Requiring adherence to laws, rules, and regulations.
Environment	All the objects, persons, and conditions in the surroundings.
Environmental Protection Agency (EPA)	An agency of the federal government, formed in 1970, which has as one of its responsibilities ensuring that governmental, residential, commercial, and industrial waste disposal activities do not affect the physical environment.
Habit	The tendency to repeat a certain pattern of behavior without thinking.
Heterogeneous Waste	A variety of refuse materials, such as glass, paper, metal, and plastics.
Homogeneous Waste	Refuse composed of similar materials, such as paper, cardboard, tissue.
Horticulture	The science and art of growing fruits, vegetables, flowers, plants and trees.
Implementation	The act of carrying out or enforcing anything necessary to achieve the end.
Improvement	Change in a positive way.
Incinerator	A plant designed to reduce waste by burning.

Landfill	A place where rubbish is deposited and covered with earth.
Litter	Scattered, uncontainerized solid waste.
Litterbug	In the United States, a person who throws trash along a highway, on a sidewalk, in a park, etc.
Littering	The act of carelessly discarding waste.
Maintenance	The upkeep of property or equipment.
Human-made	Something produced by human effort rather than by natural forces or by animals; artifically or synthetically created.
Human-power	Power supplied by the physical work of people.
Motivation	A strong desire to do something.
Ordinance	A law or order made by a town or city government.
Origin	The source from which anything comes; beginning.
Pedestrian	One who goes on foot; walker.
Perpetual	That which lasts forever; eternal.
Personal-social behavior	A person's behavior in relation to others.
Plastics	Human-made material that can be molded, cast, drawn or laminated into objects.
Premises	A house or building and its grounds.
Prevalent	That which is common or widespread.
Provision	A measure or precaution taken beforehand.
Public	Relating to or affecting all the people of a nation or a state.
Putout	Waste material placed in an area for pick-up and disposal purposes.
Receptacle	A container used for the disposal of litter.

Recycling	The processing and changing of waste.
Refuse	Solid waste not carried from human habitations by sewers; consists primarily of ashes, rubbish, garbage, and trash.
Research	Experimentation and study aimed at discovering new facts, laws, or finding new meanings or existing ones.
Residential	An area for habitation of human beings.
Residue	Something that remains after a part is separated, taken or redesignated.
Resource	A usable supply of products or power.
Rodent	Any of an order of relatively small gnawing mammals.
Sanitation	The maintenance of cleanliness and healthful living conditions.
Site	A location or a place.
Sludge	Semiliquid waste that is the residue from the treatment of sewage.
Solid waste management	The entire process of storage, collection, transportation, processing, reclamation, and disposal of solid waste.
Source	The point of origin; the place from which anything comes or is obtained.
Technology	The means employed to provide objects necessary for human survival and comfort.
Trapped	Caught, stopped and held in place; lodged.
Trash	Any waste materials (usually not garbage); rubbish; refuse.
Vermin	Small animals that are troublesome or destructive, such as fleas, lice, mice and rats.
Violation	A breaking of law, rule, agreement or promise.
Waste	Anything considered useless or worthless.
Waste materials (solids)	A variety of substantial materials that are discarded and considered useless or worthless.

B.

SUPPLEMENTARY ACTIVITIES

The following activities may be used to supplement regular classroom activities in this guide or as part of a school-wide beautification project. School Building and Grounds and Classroom checklists may be used to develop awareness of local litter problems and to monitor progress in reducing litter.

1. Plan an anti-litter campaign.

   a. Prepare a school bulletin board drawing attention to the litter problem: Display photographs taken by the students showing the seven sources of litter, factors that cause its spread, areas where litter gets trapped and problem areas within the school or nearby neighborhood. These include classrooms, lunchrooms, rest rooms, locker rooms, study rooms, gymnasiums, halls, stairways, grounds, parking lots, sidewalks, streets, bus stops, routes of to-and-from travel by foot, bicycle and car, nearby stores that sell candy, ice cream, fast foods, etc.

   b. Design anti-litter posters to display around the school to encourage others not to litter.

   c. Research and provide information for school newspaper articles.

2. Conduct a "Litter Olympics" with clubs or classes in competition to see who can collect the most trash in a designated area. Appropriate prizes and/or recognition should be planned. This is also an excellent fund raising project for the student government or various clubs as there is money to be made in collecting recyclable items, and it can be done several times a year.

3. Have students "adopt" an area with litter problems and keep it clean on a regular basis. If possible, plant trees and flowers to discourage littering, brighten the landscape and increase oxygen in the air, but clear it with the proper authorities first!

4. Sponsor a drive to collect aluminum products, bottles, cans and newspapers to send to the Recycling Center and help raise money for your club or activity.

5. Have everyone decide on a project around the school that would improve its appearance--litter pick-up, weeding, carpentry repairs, some painting, planting project, etc. If project requires special materials or supplies, expert labor, and such, work with the administration, PTA, sports support organization, or community service organization such as Boy Scouts or Lions Club and local businessmen to obtain necessary money. Stress the need for <u>everyone</u> to do a fair share.

Art

1. Litter control posters, banners, kites, and balloons
2. Decorated trash cans and trash bags
3. T-shirts - silk screen emblems
4. Litter control buttons
5. Photography exhibits on litter
6. Slide/tape presentations
7. Logo designs

Business

1. Explore how litter affects the economics of a community.
2. Develop a unit researching the costs of litter to communities and businesses. Contact your County Public Works Department to obtain figures reflecting the costs of litter collection. Compare and contrast long-range costs of litter collection and litter control programs to businesses, communities and schools.

Asian, Pacific, and European Languages

1. Create posters or buttons in foreign languages with an anti-litter slogan, map local areas with large concentrations of various ethnic groups and distribute (with permission) the posters or buttons in appropriate areas.
2. Research sanitation projects in foreign countries.
3. Compare life expectancies in foreign countries and determine if sanitary conditions contribute to these expectancies.
4. Have foreign language clubs sponsor a clean up and/or recycling campaign.
5. Compare attitudes of the people in various foreign countries toward litter and its relation to the environment.
6. Volunteer to translate articles on litter and litter control.

Health

1. Relate litter to sanitation and disease.
2. Develop a unit concerning the psychological effects of litter on a community or neighborhood.

Industrial Arts

1. Conduct discussions on industrial litter and its control.
2. Paint litter containers.
3. Make litter containers for cars.
4. Make useful items from litter.

Language Arts

1. Conduct value discussions.
2. Write debates.
3. Write letters to city councilmen.
4. Draw cartoons for newspapers.
5. Write script for television presentation by drama class.
6. Write slogans.
7. Compose limericks and poems.

Mathematics

1. Make a large graph showing per cent decrease in local litter.
2. Have students develop and solve mathematical problems based on the litter data. (See sample problems pages E10-E18.)
3. Have students investigate the profit to be made from recycling materials and project the amount of materials which must be recycled to meet a preset goal.

Music

1. Write and sing songs about litter.
2. Perform a litter-related musical.

Science

1. Study the effects of litter, erosion, and other forms of pollution on plant and animal life in given areas.
2. Make litter art in ecology class.

Social Studies

1. Conduct a classroom experiment showing the effects of litter on the classroom environment (create a littered environment and then a litter-controlled environment). Draw attention to changes in behavior and attitudes.
2. Create a slide series of one particular area showing litter, effects, sources, control, etc.

Social Studies (Cont'd)

3. Research the history of sanitation through the ages. Compare and contrast various civilizations and their litter and pollution problems. Point out any correlation between levels of technology and the size and complexity of the litter problem.

Any Subject

1. Construct bulletin board displays with slogans (see page E25) pictures, photos and material showing littered area and effects using before and after scenes. Charts may be used to record progress of litter control in certain designated areas.
2. Have students list the ways litter is generated in the home.

   Have students research how wasteful practices can be either eliminated or curtailed.

   Ask students to list ways wasteful practices can be reduced in their home and follow those ways for two weeks.

   Have students evaluate this project two weeks from the time they began to determine how much was saved in resources.

3. Organize a recycling project (see page E41) to generate funds for worthwhile school activities. This project may be done on a continuing basis with support from the local community. Aluminum and steel/tin cans, certain kinds of glass bottles, and newspapers may be collected and turned in to the recycling center. Local community service organizations or business people may help by providing the means to transport the material to the recycling center.
4. Conduct discussion on the enormity and intensity of litter problems.

   Arrange visit to library; explore use of library facilities and references (at least three).

   Assign class a paper requiring a bibliography.

   a. Identify problem.
   b. Note possible results if problem not solved.
   c. Note possible solutions (local, state, national).
   d. Project the possible social, political, economic, and environmental impacts of each solution.
   e. Have students share their papers with the class and discuss the impact of the papers.

5. A student has been appointed by the President of the United States to her/his staff as advisor on litter control. She/he may select three other members of the class to serve as staff. The remainder of the class represents the total population of the United States. The advisor and the staff are to project litter trends for the Year 2000 based on class interviews. They should give reasonable and realistic recommendation on curtailing the proliferation of litter.
6. Have students research and report on past and present changes in product packaging and the possible effects on the litter problem.

Mathematical Problems

Mathematics is a valuable tool for analyzing statistical data based on environmental problems. On the following pages are data tables from several studies conducted on the litter problem here in Hawaii. A series of problems and answers based on Table I have been supplied for classroom use. For Table II students should complete the columns showing the amount of change and percent of change. For Table III students should complete the Sub Total row.

CAR LITTER BAG SURVEY

An informal survey of automobiles at 16 sites on Oahu, Maui and Kauai was conducted to determine any difference in the number of cars that carried litter containers before and after a statewide car litter bag project. Ten businesses donated 500,000 car litter bags bearing the State Anti-Litter Symbol. They were distributed in December, 1978 with the cooperation of the Hawaii Automotive and Retail Gasoline Dealers Association.

Use the information in Table 1 (see page E12) to solve the following problems:

1. What percent of the cars surveyed had litter bags bearing the State Anti-Litter logo before distribution on (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

2. What percent of the cars surveyed had other types of litter bags before distribution on (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

3. What percent of the cars surveyed had litter bags bearing the State Anti-Litter logo after distribution on (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

4. What percent of the cars surveyed had other types of litter bags after distribution on (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

5. Compare the percents obtained in problems one (1) and three (3). Did the percent increase, decrease, or remain the same for (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

   Calculate the percent of increase or decrease wherever a change occurred.

6. Compare the percents obtained in problems two (2) and four (4). Did the percent increase, decrease, or remain the same for
   (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

   Calculate the percent of increase or decrease wherever a change occurred.

7. What is the percent of cars with all types of litter bags before distribution on
   (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

8. What is the percent of cars with all types of litter bags after distribution on
   (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

9. Compare the percents obtained in problems seven (7) and eight (8). Did the percent increase, decrease, or remain the same for
   (a) Oahu?
   (b) Maui?
   (c) Kauai?
   (d) All three islands?

   Calculate the percent of increase or decrease wherever a change occurred.

10. Graph the answers obtained in problems one (1) through nine (9) to compare the percent of cars with litter bags on Oahu, Maui, and Kauai before November 17, 1978 and after December 17, 1978.

Table I

NUMBER OF CARS SURVEYED FOR CAR LITTER BAGS
STATE OF HAWAII
BEFORE NOVEMBER 17, 1978 AND AFTER DECEMBER 17, 1978

ISLAND	Number of Cars Surveyed		Number of Cars with State Logo Litter Bags		Number of Cars with All Other Types of Litter Bags	
	Before	After	Before	After	Before	After
Oahu	2,906	3,115	22	333	424	525
Maui	656	523	20	97	191	112
Kauai	500	500	21	64	49	60
TOTAL	4,062	4,138	63	494	664	697

Figure 1

PERCENT OF CARS WITH LITTER BAGS AT SELECTED SITES ON OAHU, MAUI AND KAUAI
STATE OF HAWAII, BEFORE NOVEMBER 17, 1978 AND AFTER DECEMBER 17, 1978

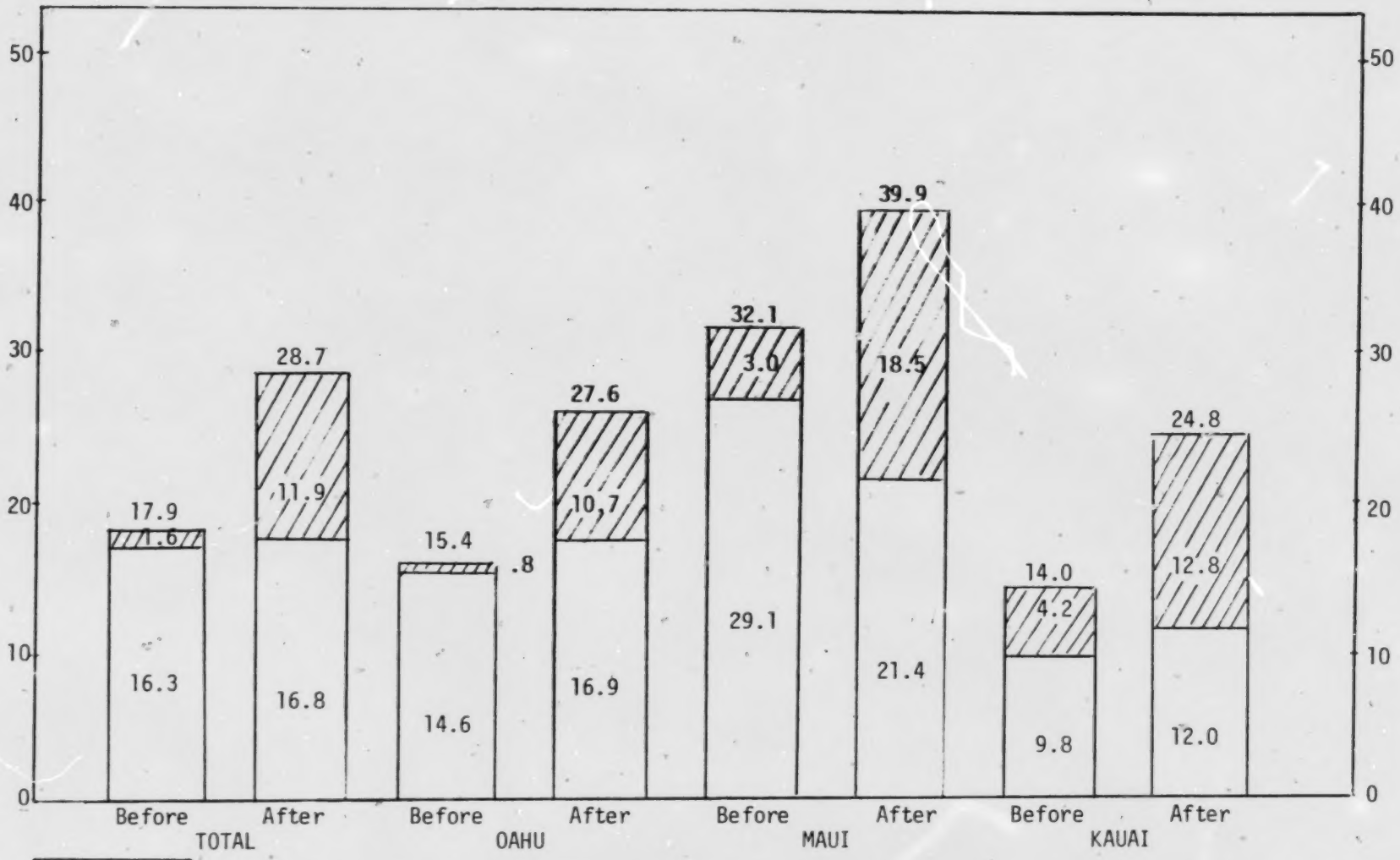


Table II

FRESH LITTER RATE CHANGES FOR LITTERED PRODUCTS AND PACKAGING
1978 VS. 1979

PRODUCT OR PACKAGING	ITEMS/MILE-WEEK (Average of State Highway, Vacant, Commercial, Residential)		Amount of Change (+, -)	Percent of Change (+, -)
	1978	1979		
Beer and Soft Drink Containers	121	55		
Juice, Wine, Liquor Containers	3	5		
Bottle Caps	52	31		
Pull Tabs	184	69		
Cups, Lids, Straws	192	80		
Carriers, Cartons, Labels	1	5		
	553	245		
Candy, Gum, Snacks	333	106		
Take-out Food	21	14		
Cigarette Packs, Matches	144	50		
Napkins, Bags, Tissue, etc.	149	82		
	647	252		
Newspapers, Magazines	21	8		
Advertising	27	3		
Toiletries, Toys, Clothing	51	27		
Milk, Food, Remnants	41	25		
Vehicle Supplies, Debris	31	17		
Construction Debris, etc.	18	11		
	189	91		
Other Products, Unidentifiable	170	156		
	1,559	744		

Complete the table above by supplying the numbers in the Amount of Change and Percent of Change columns. Indicate increase or decrease by + or - in front of each answer.

Table III

ACCUMULATED LITTER COMPOSITION
(PERCENT OF ALL ITEMS JANUARY, 1979)

	State Highways	Vacant, Undeveloped Rural	Commercial	Residential
CANS				
Soft Drink	5.78%	5.08%	2.60%	1.28%
Beer	6.24	2.95	1.56	1.08
Other Beverage	1.29	.62	.30	.31
BOTTLES				
Soft Drink Whole	.30	.07	.04	-
Soft Drink Broken	.06	-	-	-
Beer Whole	8.64	5.50	2.64	3.13
Beer Broken	1.22	6.45	.20	.15
Other Beverage Whole	.21	.42	.08	.27
Other Beverage Broken	.16	.03	-	.04
SUB TOTALS				
Beer and Soft Drink				
Other Beverage				
All Other Litter				
	100.00%	100.00%	100.00%	100.00%

Supply the missing sub totals.

ANSWERS

TABLE I

1.	(a) 0.8%	2.	(a) 14.6%	3.	(a) 10.7%	4.	(a) 16.9%
	(b) 3.0%		(b) 29.1%		(b) 18.5%		(b) 21.4%
	(c) 4.2%		(c) 9.8%		(c) 12.8%		(c) 12.0%
	(d) 1.6%		(d) 16.3%		(d) 11.9%		(d) 16.8%
5.	(a) increase 9.9%			6.	(a) increase 2.3%		
	(b) increase 15.5%				(b) decrease 7.7%		
	(c) increase 8.6%				(c) increase 2.2%		
	(d) increase 10.3%				(d) increase 0.5%		
* 7.	(a) 15.3%	* 8.	(a) 27.5%	9.	(a) increase 12.2%		
	(b) 32.2%		(b) 40.0%		(b) increase 7.8%		
	(c) 14.0%		(c) 24.8%		(c) increase 10.8%		
	(d) 17.9%		(d) 28.8%		(d) increase 10.9%		

10. See Figure I page E13.

* NOTE: Answers on problems seven (7) and eight (8) may vary slightly depending upon whether the answers are obtained by adding the per cents or by calculating the per cents of all litter bags by adding the number of bags and then dividing.

60

ANSWERS

TABLE II

Amount of Change	% of Change	
- 66	- 54.5	
+ 2	+ 66.7	
- 21	- 40.4	
- 115	- 62.5	
- 112	- 58.3	
+ 4	+ 400 %	
- 308		- 55.7%
- 227	- 68.2%	
- 7	- 33.3%	
- 94	- 65.3%	
- 67	- 45.0%	
- 395		- 61.1%
- 13	- 61.9	
- 24	- 88.9	
- 24	- 47.1	
- 16	- 39.0	
- 14	- 45.2	
- 7	- 38.9	
- 98		- 51.9
- 14	- 8.2	
- 815		- 52.3

ANSWERS

TABLE III

Sub Totals				
Beer and Soft Drink	22.24	20.05	7.04	5.64
Other Beverage	1.66	1.07	.38	.62
All Other Litter	76.10	78.88	92.58	93.74

Vocabulary Builders

Directions: Each of the following is a "scrambled" word. Rearrange the letters in the correct order.

1. etitrl _____
2. awsl _____
3. ldalnlfi _____
4. ofenmcrtnese _____
5. ctedinoua _____
6. rbside _____
7. sdpoilsa _____
8. nmrtirevone _____
9. tabcreia _____
10. tttdaeisu _____
11. tcnareoin _____
12. rtgubtlie _____
13. uamnaedmn _____
14. fesuer _____
15. eitss _____
16. etclereapc _____
17. gtoholycen _____
18. aoinvolit _____
19. swtea _____
20. rshta _____
21. leeccry _____
22. ipvorsnsio _____
23. ihbat _____
24. nstitnoaia _____
25. oaopecrtoin _____

Key to Vocabulary Builders

Unscrambled Words

1. litter
2. laws
3. landfill
4. enforcement
5. education
6. debris
7. disposal
8. environment
9. bacteria
10. attitudes
11. container
12. litterbug
13. human-made
14. refuse
15. sites
16. receptacle
17. technology
18. violation
19. waste
20. trash
21. recycle
22. provisions
23. habit
24. sanitation
25. cooperation

A Suggested Activity:

Tour of School Building and Grounds

OBJECTIVE: Students will be able to identify areas of the school and grounds that need focused attention for the control of litter.

DESCRIPTION: Students will tour areas of the school and grounds to observe the presence of litter. During the tour a student committee will complete a checklist.

PROCEDURE: Instructor will view and discuss with class the Litter Control Program slide presentation.

CULMINATING ACTIVITY: Students will (1) construct a bar graph to show areas of the school and its grounds which have the greatest volume of litter; and (2) develop a program for controlling litter in these areas.

Tour of School Building and Grounds Checklist

LOCATION	0 No Litter	Occasional Litter 1 1-3 Pieces of Litter	Light Litter 2 4-6 Pieces of Litter	Medium Litter 3 7-10 Pieces of Litter	Heavy Litter 4 11 or more Pieces of Litter
Halls					
Stairways					
Boys Bathroom					
Girls Bathroom					
Principal's Office					
V-Prin's Office					
Counselor's Office					
Health Unit					
Media Centers					
Faculty Lounge					
Library					
Large Playground (Grassy Area)					
Small Hardtop Playground					
Front Area of School					
Side Area of School Left					
Right					
Back Area of School					
Cafeteria					
Auditorium					
Custodians Room					

GRADE: _____ TEACHER: _____ RM. NO. _____

Daily Classroom Checklist

Symbols	0	Occasional Litter 1	Light Litter 2	Medium Litter 3	Heavy Litter 4
LOCATION	No Litter	1-3 Pieces of Litter	4-6 Pieces of Litter	7-10 Pieces of Litter	11 or more Pieces of Litter
Student's Desk					
Teacher's Desk					
Book Cases					
Window Sills					
Top of Lockers					
Inside Student's Locker					
Classroom Floor					
Area in Hall Outside Classroom					
Trash Can Area					

Cooperation Squares

Rules for Play

Divide class into groups of five. Give each group one puzzle.

Give each student an envelope. Give the group these directions only:

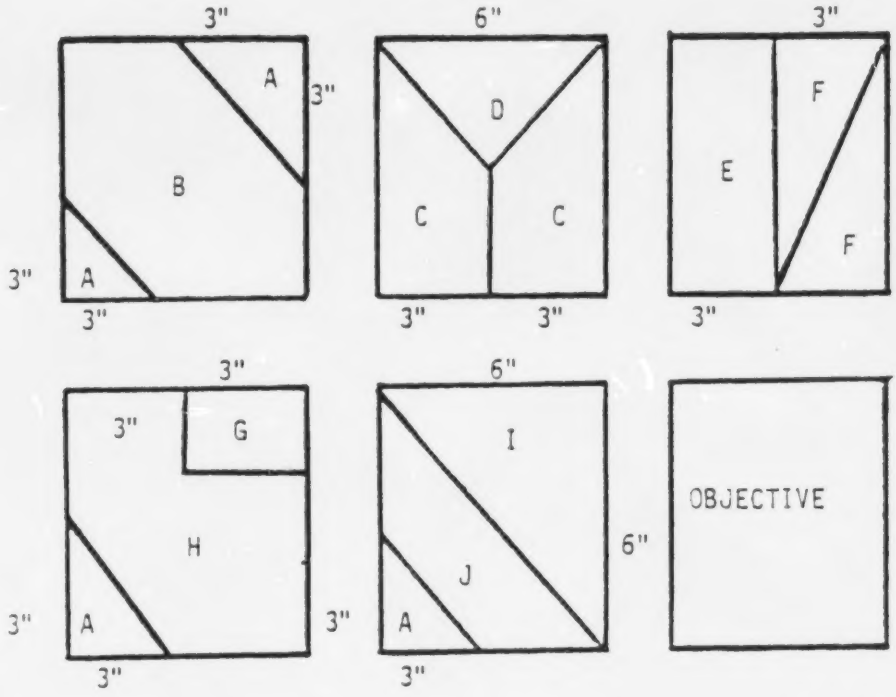
1. Each player in the group is to complete a puzzle (make a square).
2. The first group to make 5 squares wins.
3. NO ONE MAY TALK.
4. NO ONE MAY TAKE OR ASK FOR PIECES from others in the group.
5. Students MAY OFFER their pieces to help others complete a square.
6. Players MAY ACCEPT puzzle pieces IF OFFERED.
7. Continue to play until each group finishes.
8. All squares must be the same size.

Sample Questions to Ask at Task Completion

1. Was this a difficult game for you to play? If yes, why?
2. Did you remain calm while you participated?
3. How did you feel when someone had a part of a square that you thought you could use and would not give it to you?
4. Did the members of your group work together? How?
5. Did you feel handicapped by not being able to talk?
6. Were you tempted to take part of someone's puzzle?

Cooperation Squares

Litter control is a group concern, and all must work together for a cleaner and more beautiful community. This game is designated to teach them how to work cooperatively as a group.



Directions

PLAYERS: Assign five students to a puzzle.

MAKING THE PUZZLES: Make five 6"-squares of construction paper or poster board and cut as noted above. Label each puzzle piece by letter.

DISTRIBUTION: Distribute pieces in 5 packets.

Packet 1: I H E
Packet 2: A A C
Packet 3: B D A
Packet 4: G F C
Packet 5: F J A

Litter Control Slogans

Don't Be a Litterbug

Stash the Trash

Don't Litter

Smash Trash!

Fight Litter!

Keep Hawaii Beautiful!

Don't Toss It Out - Toss It In!

Litter and Dirt - Hurt

You are the Solution to Pollution

Only You Can Stop Pollution

Don't Be a Litter Critter

Right In

Use Good Taste - Don't Waste

I'll Wear a Frown If You Throw Litter Down

Choke, Choke, Litter's No Joke

Give a Hoot - Don't Pollute

People Start Pollution. People Can Stop It.

You Can Put a Lid on Litter

Hold Fast to Your Trash

Don't Cast Your Trash to the Wind

Pitch In!

Take Pride in Hawaii

Help Keep Hawaii Clean and Green

Join the Clean Machine

Let Your Feet Do the Walking to the Trash Can and Pitch In!

Litter is No Mynah Matter

Lend a Hand to Clean Our Land

For the Love of Hawaii, Clean Hawaii

Hawaii is Not Big Enough for Litter

Mene Hands Make Litter Lighter

Litter's Cure, Be Littersure

Hawaii Needs Your Love, Not your Litter

Stop Litter Before It Starts

Litter Bingo

DIRECTIONS: Given two free spaces anywhere on the board, the students will cover the word when it is called. Six covered spaces across, down or diagonally constitute LITTER! which student calls out. Prizes may be given.

The same rules can be applied but definitions instead of words may be used.

MATERIALS: POSTER BOARD, MAGIC MARKER, CHIPS, CORN, PENNIES, BEANS, CIRCLES, etc.

	L	I	T	T	E	R
L	habit	FREE	lodge	source	waste	container
I	site	human-made	hazard	litter	origin	health
T	ecology	ordinance	control	sanitation	trap	pedestrian
T	education	technology	disposal	litterbug	trash	receptacle
E	littering	environment	motorist	dump	community	bacteria
R	attitude	violation	appearance	citation	FREE	cooperate

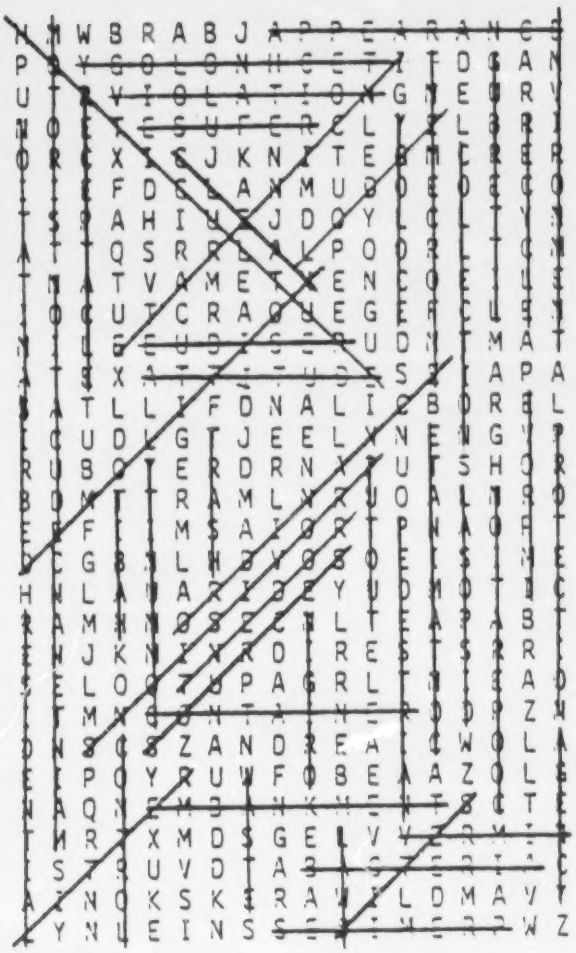
Word Find Puzzle

H M W B R A B J A P P E A R A N C E
P O Y G O L O N H C E T I T D G A N
U T R V I O L A T I O N G N E U R V
N O E T E S U F E R C L Y E L B R I
O R C X I C J K N I T E G M C R E R
I I E F D C L A N M U D O E O E C O
T S P A H I U E J D O Y L C L T Y N
A T T Q S R R L A L P O O R L T C M
T N A T V A M E T N E N C O E I L E
I O C U T C R A O U E G E F C L E N
N I L E E U D I S E R U D N T M A T
A T E X A T T I T U D E S E I A P A
S A T L L I F D N A L I C B O R E L
I E U D L G T J E E L N N E N G V P
R U B O Y E R D R N A P U T S H O R
B D M T T R A M L N R U O A L N R O
E E F I I M S A I O R T P N A O P T
D C G B N L H D V O S O E I S I M E
H N L A U A R I D E Y U D M O T I C
R A M H M O S E C N L T E A P A B T
E N J K M I N R D I R E S T S R R I
S E L O O T U P A G R L T N I E A O
I T M N C O N T A I N E R O D P Z N
D N S C S Z A N D R E A I C W O L A
E I P O Y R U W F O B E A A Z O L G
N A Q N E M B A N K M E N T S C T E
T M R T X M D S G E L V V E R M I N
I S T R U V D T A B A C T E R I A C
A I N O K S K E R A W I L D M A V Y
L Y N L E I N S S E S I M E R P W Z

DIRECTIONS: The following words appear in the puzzle above. Find and draw a line through them. The words may occur in reverse order, up or down, across or diagonally.

AGENCY
APPEARANCE
ATTITUDE
BACTERIA
CLEAN
COLLECTION
COMMUNITY
CONTAINER
CONTAMINATE
CONTROL
COOPERATION
DEBRIS
DEMOLITION
DISPOSAL
ECOLOGY
EDUCATION
EMBANKMENTS
ENFORCEMENT
ENVIRONMENT
HABIT
HORTICULTURE
INCINERATE
IMPROVE
LAWS
LITTER
LITTERBUG
LODGE
MAINTENANCE
MOTORIST
ORDINANCE
ORIGIN
PEDESTRIAN
PREMISES
PROTECTION
PROVISIONS
PUTOUT
RECEPTACLE
RECYCLE
REFUSE
RESIDENTIAL
RESIDUE
RODENT
SANITATION
SITES
SOURCES
TECHNOLOGY
TRASH
VERMIN
VIOLATION
WASTE

Key to Word Find Puzzle



SUPPLEMENTARY INFORMATION

This section contains information which may be useful in conducting the activities listed in this guide. Governmental agencies and departments and private organizations concerned with litter reduction and control and recycling are listed along with sources of available films and speakers.

Agencies and Departments Concerned with Litter

State

Department of Accounting and General Services: services and maintains state buildings and grounds; provides refuse collection services for public schools.

Attorney General: provides legal advice regarding litter control activities such as roadside dumpster program, cleanup projects, and maintenance of state property, and handles legal aspects of enforcement actions.

Department of Education: provides public school students with learning experiences related to the problem of litter, provides custodial services for maintenance of buildings and grounds.

University of Hawaii Environmental Center: coordinates the University of Hawaii's education, research and service efforts in the area of ecology, including litter.

Office of Environmental Quality Control: conducts environmental research and serves as environmental advisor to the Governor, various government agencies and private industry.

Hawaii Housing Authority (Department of Social Services and Housing): manages and maintains public housing projects.

Department of Health: has primary responsibility for coordinating state's litter control efforts, investigates environmental, pollution and sanitation problems, such as illegal dumps, and unsanitary food operations.

Office of Information (Governor's Office): provides information on the various state agencies.

Department of Land and Natural Resources: services and maintains state parks, public hiking trails, fish and game reserves and areas, forest areas, and other state lands, has responsibility for enforcement of fish and game, forest, and park regulations.

Department of Transportation: services and maintains state highways, harbors and airports; responsible for enforcement of airports and harbor regulations.

County

Responsibilities of County agencies vary; therefore, litter-related activities may not be conducted by the same agency in each county. Listed below are the county functions relating to litter and the department or agency likely to serve that function.

Building Department: inspects buildings to ensure safe and sanitary conditions.

City (or County) Council: promulgates laws and regulations that relate to litter control.

Fire Department: inspects buildings to prevent fire hazards due to accumulation of flammable and combustible materials.

Information and Complaints (Mayor's Office): provides information on county agencies and handles complaints regarding county problems, services and procedures.

Parks and Recreation: services and maintains parks and recreation facilities under the jurisdiction of the county; also, conducts beautification projects.

Police Department: issues citations to violators of state and county litter laws.

Prosecuting Attorney: prosecutes violations of state and county litter laws.

Public Works: operates disposal sites, collects household refuse, collects bulky items, and maintains county roads and streams.

Federal

The various federal agencies service and maintain facilities and grounds under the jurisdiction of the federal government.

Statewide

Hawaii Revised Statutes

1. Chapter 339 (State Litter Law): No person shall discard or otherwise dispose of litter in a public place, on private property, or in the waters of the State except in a place designated for the disposal of garbage and refuse or into a litter receptacle or litter bag. No person shall damage or remove a litter receptacle from its place. No person shall transport litter from private households or commercial activities and discard them in public litter receptacles. Any person violating any provision of this chapter shall be fined not more than $250 and/or be ordered to pick up litter up to eight hours for each offense. In addition, violators may be ordered to pick up or pay for removal of the litter that they caused.

2. Section 727-5 (Depositing glass, etc. on highways): Whoever negligently or maliciously scatters, throws, drops, or deposits, or causes to be scattered, thrown, dropped, or deposited, any paper, glass bottle, tin can, nail, tack, wire, stone, or other substance dangerous to traffic on any highway, street, road, alley, or lane in the State, shall be fined not more than $100.

3. Hawaii Penal Code, Section 708-829 (Criminal Littering): A person commits the offense of criminal littering if he knowingly places, throws, or drops litter on any public or private property or in any public or private waters without the consent of the owner, whose interest is affected thereby. Criminal littering is a petty misdemeanor. The court may sentence any person convicted of committing the offense of criminal littering as follows: a) for the first offense, up to fours picking up litter on public property, and b) for any subsequent offense up to eight hours picking up litter on public property.

Statewide Traffic Code

1. Section 291c-131 (Spilling Loads on Highway):

   a. No vehicle shall be moved on any highway, unless such vehicle is so constructed, covered or loaded as to prevent any of its load, other than clear water or feathers from live birds, from dropping, sifting, leaking, blowing, spilling, or otherwise escaping therefrom.

   b. No vehicle shall be driven or moved on any highway when any load thereon is not entirely within the body of the vehicle; provided, however, that this prohibition shall not apply if the load is securely fastened by means of clamps, ropes, straps, cargo nets, or other suitable mechanical device to prevent such load from dropping onto the highway or from shifting in any manner.

2. Section 291c-132 (Littering from Vehicles): No person shall throw, place, or drop litter from a vehicle on any highway. The driver of the vehicle may be cited for any litter thrown, placed, or dropped from such vehicle. Penalty for first offense is up to four hours picking up litter on public property; second offense is picking up litter for up to eight hours.

Public Health Regulations

1. Chapter 51 (Receptacle Requirements) - The following public places shall meet requirements for the placement and servicing of receptacles:

   a. Bus Stops: 1 at each beach stop, bus shelter, school bus loading zone, major transfer point, or combination of the above; 1 at each official bus stop by 6/30/80.

   b. Drive-In Theatres: 2 per motorist exit.

   c. Sites of Carnivals, Fairs, Festivals, Circuses, Shows, Concerts, and other Public Events: 2 at each exit; 1 at each end of walk through exhibit building or tent; 1 at each food or drink booth; 1 at the entrance to each ride.

   d. Parks, Playgrounds, Beaches, School Athletic Areas: 1 at each pavilion, restroom structure, picnic area, softball or baseball backstop, major entrance to a gymnasium or swimming pool area; 1 for every 2 outdoor basketball, volleyball or tennis courts or combination thereof; 1 for each 120 bleacher seats or 1 per bleacher section.

   e. Gasoline Service Stations: 1 for each gas pump island block.

   f. Boat Fueling Docks: 1 at each fueling dock.

   g. Lookouts Along Public Highways: 1 for first 100 feet or fraction thereof, and 1 for each additional 50 feet of restraining wall or fence.

   h. Take-Out Restaurants: 2, plus 1 for every service window.

   i. Mobile Food Vendors: 1 at each mobile food vendor.

   j. Shopping Centers and Malls: 1 for each 200 feet or fraction thereof, of store frontage.

   k. Outdoor Parking Lots: 1 per first 50 stalls, plus 1 for each additional 200 stalls or portion thereof, except for employee parking lots, lots with less than 10 stalls, and parking lots not held out for public use.

   l. Parking Structures: 1 per stairway, elevator and pedestrian exit per floor; or 1 when a stairway, elevator or pedestrian exit are within 50 feet of each other.

County Ordinances

Litter ordinances for the City and County of Honolulu are listed below. These ordinances can be found under Chapter 26, Article 4 of the Revised Ordinance of Honolulu. Contact the county clerk's office for the specific county ordinances for the counties of Hawaii, Maui, and Kauai.

1. Litter in Public Places: No person shall throw or deposit litter in or upon any street, sidewalk or other public place within the county except in public receptacles, in authorized private receptacles for collection, or in official county dumps.

2. Litter in Parks: In addition to Litter in Public Places, where such public receptacles are not provided, all litter shall be carried away from the parks by the person responsible for its presence and properly disposed of elsewhere.

3. Litter Thrown from Vehicles: No person, whether a driver or passenger in a vehicle, shall throw or deposit litter upon any street or other public place within the county, or upon private property.

4. Truck Load Causing Litter: Same as Statewide Traffic Code section 291c-131.

5. Litter in Streams, etc.: No person shall throw or deposit litter in any stream, fountain, pond, lake, bay or any other body of water in a park or elsewhere within the county.

6. Keeping Sidewalks Free of Litter: Persons owning or occupying property within the county shall keep the sidewalk in front of their premises free of litter.

7. Sweeping into Gutters: No person shall sweep into or deposit in any gutter, street or other public place within the county any accumulation of litter from any building or lot or from any public or private sidewalk or driveway.

8. Litter on Occupied Private Property: No person shall throw or deposit litter on any occupied private property within the county, except that the owner or person in control of private property may maintain authorized litter receptacles for collection so that litter will be prevented from being carried or deposited by the elements upon any street, sidewalk or other public place or upon any private property.

9. Litter on Vacant Lots: No person shall throw or deposit litter on any open or vacant private property within the county whether owned by such person or not.

10. Animal Wastes Prohibited: No person shall permit any animal owned by him or while in his custody to excrete any solid waste in any public place or on private premises not the property of such owner.

11. Placement in Receptacles/Prevent Scattering: Persons placing litter in public receptacles or in authorized private receptacles shall do so in such a manner as to prevent it from being carried or deposited by the elements upon any street, sidewalk or other public place or upon private property.

12. Litter from Aircraft: No person in an aircraft shall throw out, drop or deposit within the City any litter, handbill or any other object.

13. Posting Notices Prohibited: No person shall post or affix any notice, poster or other paper or device, calculated to attract the attention of the public, to any lamp post, public utility pole or shade tree, or upon any public structure or building except as may be authorized by law.

14. Owner Maintain Premises Free of Litter: The owner or person in control of any private property shall at all times maintain the premises free of litter. This section shall not prohibit the storage of litter in authorized private receptacles for collection.

15. Clearing Litter from Open Private Property: a) Notice to Remove. The Chief of Engineer is hereby authorized and empowered to notify the owner of any open or vacant private property within the City or the agent of such owner to properly dispose of litter located on such owner's property. Such notice shall be by Registered Mail, addressed to said owner at his last known address; and a copy thereof posted on the property.

16. Penalties: Any person violating any of the provisions of this Article shall upon conviction thereof be subject to penalties as set forth in the State Litter Law (HRS) 339-8. No violation of Section 26.4.4 (sidewalks) and 26.4.12 (owner maintain premises) shall have occurred unless the property owner or occupant has been given a warning citation and given a reasonable time to remove the litter.

Government Agencies Involved in the Litter Problem

Oahu

City and County of Honolulu

Fire Department, Fire Chief's Office	955-8301
Land Utilization, Department of	523-4414
Historic, Cultural, Scenic Districts	523-4252
Shoreline Management	523-4077
Office of Information and Complaint	
Complaint	523-4381
Information	523-4385
Parks and Recreation, Department of	523-4181
Community Services	523-4012
Police Department	955-8111
Public Works, Department of	523-4341
Environmental Engineer	523-4150
Refuse Collection and Disposal Division	523-4685
Bulky Items and Dead Animal Collection	523-4685
Road Maintenance Division	523-4471
Wastewater Management Division	523-4321
Water Supply, Board of	548-7081
Water Information and Complaints	548-6126

State of Hawaii

Education, Department of, (Public Information)	548-6911
Environmental Quality Control, Office of	548-6915
Health, Department of	
Environmental Protection and Health Services	548-6455
Litter Hotline	548-3400
Pollution Investigation and Enforcement	548-6355
Land and Natural Resources, Department of	548-6550
Fish and Game Division	548-4002
Division of Forestry	548-2861
Division of Land Management	548-7517
Office of Ombudsman	548-7811
Transportation, Department of	548-3205
Water Transportation Facilities Division	548-2570
Land Transportation Facilities Division	548-5710
University of Hawaii	
Environmental Center	948-7361
Public Health, School of, (Environmental Health)	948-8491
Water Resources Research Center	948-7847

United States Government

Agriculture, Department of	
Forest Service Institute Office	546-5669
Army Corps of Engineers	438-1331

United States Government (Cont'd)

Environmental Protection Agency	546-8910
Interior, Department of	
Division of Law Enforcement	546-5602
Transportation, Department of	546-5111
Coast Guard, Civil Engineering	546-5544
CINCPAC Headquarters	
Public Affairs Office	477-6282
Air Force (Hickam)	499-1660
Army Headquarters	
Public Affairs Office	438-9761
Coast Guard District Office	546-5531
Marine Corps Headquarters	477-6824
Navy Headquarters	471-8471

Hawaii

County of Hawaii

Information and Complaints	961-8211
Parks and Recreation	961-8311
Police Department Headquarters	961-2211
Public Works Department	
Road Construction and Maintenance	961-8349
Sewers and Sanitation	961-8338
Water Supply Department	935-1127

State of Hawaii

Health, Department of	
Environmental Protection and Health Services	961-7371
Litter Hotline	961-7371
Office of Information	Enterprise 8067
Land and Natural Resources, Department of	
Fish and Game Division	961-7291
Division of Forestry	961-7221
Division of State Parks	961-7200
Water and Land Development Division	961-7279
Office of Ombudsman (call collect)	548-7811
Transportation, Department of	
Water Transportation Facilities Division	935-4877
Land Transportation Facilities Division	935-3347

United States Government

Agriculture, Department of	
Forest Service	935-6292
Interior, Department of	
Bureau of Sport Fisheries and Wildlife, Damage Research Station	935-2220

Maui

County of Maui

Human Concerns, Department of	244-7805
Information	244-7866
Complaints	244-7756
Parks Department	244-7750
Planning Department	
Environmental Coordinator	244-7735
Police Department, Wailuku	244-7811
Public Works, Department of	
Highway Division	244-3230
Refuse Collection	
Hana	248-8254
Lahaina	661-0501
Makawao	572-8686
Wailuku	244-4858
Water Supply Department	244-7730

State of Hawaii

Health, Department of	
Environmental Protection and Health Services	244-4255
Litter Hotline	244-4255
Office of Information	Enterprise 8067
Land and Natural Resources, Department of	
Fish and Game Division	244-4352
Forestry Division	244-4352
Land Management Division	244-4352
State Parks Division	244-4354
Office of Ombudsman (call collect)	548-7811
Transportation, Department of	
Water Transportation Facilities Division	
Lahaina	661-3557
Maalaea	244-7041
Kahului	877-5051
Land Transportation Facilities Division	877-5061

United States Government

Interior, Department of	
Geological Survey, Surface Water	877-6135
National Park Service	572-7749

Molokai

County of Maui

Fire Department	
Hoolehua (Business Office)	567-6525
Kaunakakai (Business Office)	553-5601
Parks Department	
Kaunakakai	553-5775
Kilohana	558-8229
Police Station, Kaunakakai	553-5355
Water Supply Department	553-5857

State of Hawaii

Health, Department of 553-5323
Office of Information . . . . . Enterprise 8067
Land and Natural Resources, Department of
Division of Fish and Game. 553-5415
Division of Forestry 553-5019
Water and Land Development Division. . . . . .
Hoolehua. 567-6150
Kaunakakai. 553-5525
Office of Ombudsman (call collect) 548-7811
Transportation, Department of
Water Transportation Facilities Division 553-5105
Land Transportation Facilities Division. 553-5364

Lanai

County of Maui

Police Station. 565-6525

State of Hawaii

Land and Natural Resources, Department of 565-6688
Office of Information . . . . . Enterprise 8067
Office of Ombudsman (call collect). 548-7811

Kauai

Kauai County

Information and Complaint Office. 245-3213
Police Department Headquarters. 245-6721
Public Works Department 245-4751
Parks and Recreation 245-4751
Beautification Section 332-9541
Poundman--Animal Pickup. 245-3318
Road Construction and Maintenance. 245-4751
Water Department
Engineering and Administration 245-6986

State of Hawaii

Health, Department of
Environmental Protection and Health Services 245-4323
Litter Hotline 245-4323
Office of Information . . . . . Enterprise 8067

State of Hawaii (Cont'd)

Land and Natural Resources, Department of	
Division of Fish and Game	245-4444
Division of Forestry	245-4444
Division of State Parks	245-4444
Division of Water and Land Development	245-4444
Office of Ombudsman (call collect)	548-7811
Transportation, Department of	
Water Transportation Facilities Division	
Nawiliwili	245-6996
Port Allen	335-5511
Land Transportation Facilities Division	245-4461

United States Government

Interior, Department of	
Fish and Wildlife Service	828-1431
Geological Survey, Surface Water	245-3252

Private Organizations

Involved in Litter Reduction (Oahu)

Clean Hawaii	531-1145
*The Outdoor Circle	521-0074
Pitch-In!	955-4694

*The Outdoor Circle has chapters on Maui, Kauai, and Hawaii.

Private Organizations Involved in Recycling (Oahu)*

Newspapers, aluminum and steel cans, bond paper, some brands of beer bottles and corrugated tabs are easily collected recyclable items. For buyers of scrap metals and other types of discards consult the Yellow Pages of your telephone directory.

C A S H F O R T R A S H

FIRM	TELEPHONE	Newspapers	Aluminum cans	Steel cans	Bond paper	Beer bottles (check brands)	Corrugated tabs	IBM cards
Beer Recycling Center of Hawaii	531-7711		X			X		
Consolidated Fibers, Inc.	524-4233	X			X		X	X
Hawaii Recycling Services, Inc.	847-2068	X			X			X
The Recycling Group	847-3131	X	X	X				

*There are recycling centers on Maui and Kauai and private recycling businesses are listed under Recycling Center and Waste Papers in the Yellow pages of your telephone book.

FILMS

Cycles:

15 minutes, 16 mm sound and color. Cleverly weaves nature's cyclical balancing with human need to recycle waste. Shows ways currently being tried. 4-Adult

Contact: The Outdoor Circle

The Litterbug:

7 minutes, 16 mm sound animated color cartoon by Walt Disney Productions. Donald Duck is the star of this picture which shows various types of litterbugs in action. K-3

Contact: The Outdoor Circle

The Litter Monster:

16 minutes, 16 mm sound and color. With the litter they have collected, kids make a "litter monster". K-3

Contact: The Outdoor Circle

Meecology:

30 minutes, 16 mm sound and color film presents four children, each with two interpretations of what one child can do for ecology. Simple mechanical photographic techniques such as speeding, slow motion, freezing, and back-winding add appeal. K-4

Contact: The Outdoor Circle
McDonald's of Hawaii

Only One:

12 minutes, 16 mm sound and color film of litter in Hawaii. Shows the natural beauty of Hawaii, ugliness caused by litter and suggestions for prevention. Explains that it takes only one person to litter, but it takes each and every one of us to clean it up. K-6

Contact: The Outdoor Circle

Pitch-In:

10 minutes, 16 mm sound and color film starring Jonathan Winters in four separate roles as a litterer. This comedy over-emphasizes to make its point about different types of littering that include unthinking, unintended and deliberate. 4-Adult

Contact: Department of Education, Technical Assistance Center (Video-tape copy)
Litter Control Program
Pitch-In!

Resource Recovery Is...:

20 minutes, 16 mm color film that gives a definition, a status report, a look into the future. It tells what resource recovery is and how it works in its various forms, and examines the outlook for the conservation of natural resources through the widespread application of resource recovery. 8-Adult

Contact: Pitch-In!
Department of Education, Technical Assistance Center (Video-tape copy)

SLIDE SHOWS

Litter! (Junk You Know):

7 minutes, color slide and tape show, locally produced. Describes: the 7 sources of litter; factors that cause it to spread; areas where it becomes trapped; hazards of litter; actions to control it; benefits of recycling; State Litter Control Program. Good supplement to this instructional guide. 4-6

Contact: Litter Control Program

Auwe! Litter:

8 minutes, color slide and tape show, locally produced. Similar to "Litter! (Junk You Know)" slide show. Good supplement to this instructional guide. 7-12.

Contact: Litter Control Program

The following materials are provided free by the Litter Control Program:

Coloring Sheets:

8 different coloring sheets that have litter control and recycling themes. Can be used to stimulate class discussion. K-3

Decals (State Anti-Litter Symbol):

3 inch size
8 inch size

Posters (the titles are):

Pilau (Junk You Know)
Open For Business
Your Trash Ain't Nothin' But Cash

Brochures:

Are available on topics such as the sources of litter, actions to control litter, recycling, and the State Litter Control Program.

Litter Bags:

Provided for cleanups of public places.

Certificates of Appreciation

Awarded to recognize volunteer efforts in litter control projects.

* * * * *

The materials listed above may be requested from the following organizations by calling the numbers below:

Litter Control Program	548-3400
McDonald's of Hawaii	523-2494
The Outdoor Circle	521-0074
Pitch-In!	955-4694
Department of Education Technical Assistance Center	548-6250